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The NATIONAL ELEMENTARY

PRINCIPAL

BULLETIN OF THE DEPARTMENT OF ELEMENTARY SCHOOL PRINCIPALS
NATIONAL EDUCATION ASSOCIATION

AIDS TO TEACHING
IN THE
ELEMENTARY SCHOOL

THIRTEENTH
YEARBOOK

JUNE 1934
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Executive and Editorial Offices, 1201 Sixteenth Street, Northwest, Washington, D. C.
Eva G. Pinkston, Editor.
Yearbook Prepared by Editorial Committee.

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THE FRONTISPIECE—*Elementary-school children aboard the BEAR, former Coast Guard cutter of the Alaskan patrol. What a school journey long to remember!*

This famous barkentine, built in Greenock, Scotland, in 1874, was purchased by the United States Navy in 1884 for use in the relief of the Greely expedition. Her length over all is 198 feet, beam 28½ feet, and draft 18 feet, with a displacement of 1700 tons. She is built of oak, especially constructed to withstand the shocks when working with ice.

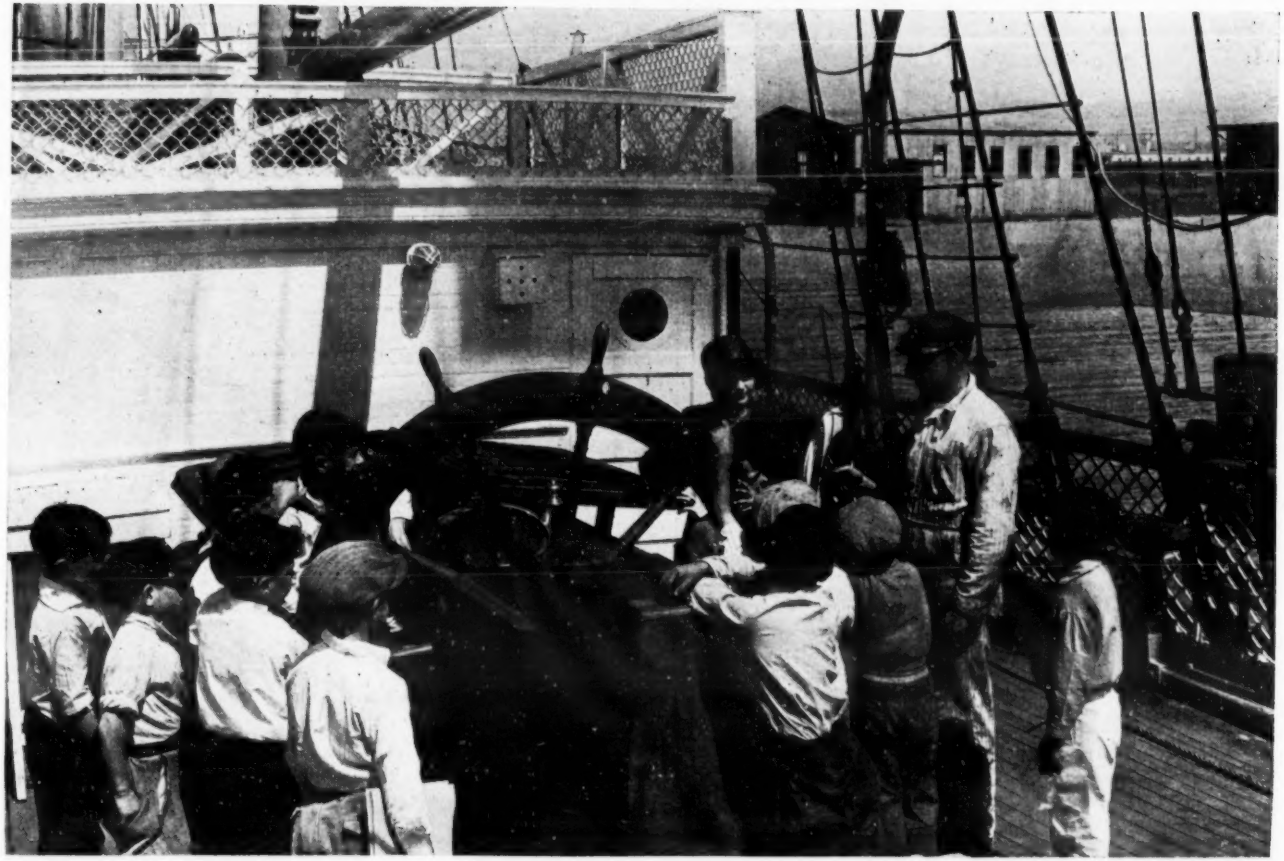
On April 24, 1884, with a crew of thirty-four officers and men, the BEAR left Brooklyn for the Arctic regions. She returned in August with the Greely expedition. The vessel was then turned over to the Coast Guard and continued in this service on the Pacific Coast until 1928.

The stories of heroism and adventure associated with the BEAR are many. Hardly a season went by that the crew of one or more whaling vessels was not rescued and returned to civilization. During the gold rush of 1896 the crew maintained order and cared for many until the Army and civil authorities assumed responsibility. The BEAR established a splendid reputation among the Alaskan natives as the symbol of the power and justice of the federal government.

In 1912 Stefansson was brought out of the Arctic regions on the BEAR. At one time or another a number of famous persons have been passengers, including General Funston and Captain Amundsen. It was a commander of the BEAR, Captain Healy (1887-1895), who first suggested that reindeer be introduced into Alaska to furnish clothing and food for the natives.

In 1928 the BEAR was retired from the Coast Guard service. Admiral Byrd obtained the ship for his latest Antarctic expedition. According to recent reports the BEAR has unloaded its supplies at Little America and is now waiting at Australia for the time when the expedition returns to civilization.

The picture was supplied by the school system of Oakland, California. The information about the BEAR came from the Headquarters of the United States Coast Guard thru the courtesy of Oliver M. Maxam, chief of the division of operations.



AIDS TO TEACHING IN THE ELEMENTARY SCHOOL

Thirteenth Yearbook

THE NATIONAL ELEMENTARY PRINCIPAL

Bulletin of The Department of Elementary School Principals, National Education Association

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PREFACE

ELEMENTARY-SCHOOL PRINCIPALS constantly seek to improve instruction. For some time supervision has been considered as the most important function of the principal. Today, there is a definite trend to consider supervision as *the* function of the principal; administration, clerical duties, and other activities are fitted into the function of supervision as component parts. Everything that the principal does touches the learning processes in some vital way. Previous yearbooks of the Department have helped to raise the professional understanding and standards of principals. In this, the *Thirteenth Yearbook,* direct emphasis is placed again upon the improvement of instruction.

Thruout this yearbook are many excellent descriptions of practises in the provision and use of aids to teaching. It seems on careful study, however, that the greatest values in the articles are the implications of progressive thinking and planning for a better education. During times of adversity, principals evidently display resourcefulness and leadership. The contributions in the 1934 yearbook are a tribute to supervision and a prophecy of better instruction.

The Editorial Committee is grateful to all persons who made this yearbook possible by the articles and suggestions submitted. It is regretted that economies in space and limitation of subject made necessary the return of some manuscripts.

For editorial advice and for research assistance in the preparation of the yearbook appreciation is expressed to Dr. Frank W. Hubbard, associate director, Research Division, National Education Association. Eva G. Pinkston, executive secretary of the Department, has given great assistance. To the many others who have helped make this yearbook a reality is due the sincere acknowledgment of the Department. The Department loses the services of Helen B. Shove, who has served the three-year Editorial Committee term, and gains the help of Dr. Samuel Berman of Philadelphia, the new appointee.

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OUR YEARBOOKS

THE DEPARTMENT of Elementary School Principals adds each year one volume to its epoch-making studies in the field of elementary education. What is more hopeful in American education than this study of their problems by the nation's principals? What an array of interesting and vital problems have been studied in this field of education during the thirteen years of the life of this Department!

This year the Department inquires about teaching aids. Every principal is interested in this problem. What are teaching aids? How can they be obtained? How can they be used so as to insure the maximum educational value? How can the principal and teachers evaluate the results of such use? These and many other aspects of the problem are presented in this volume. However well you may have met your situation there are certain to be some new suggestions from your fellow principals.

Nothing would be more helpful to the Department than reports on how principals use these yearbooks. What about them do you find desirable and helpful? What would you change if you were editing them? Many principals give them an important place in their professional library. The Department hears from colleges and public libraries concerning the use they make of our yearbooks. It would help if you write also.

The yearbooks have been used by some principals as a basis for faculty meetings. Articles of vital interest to teachers are read and discussed. Other articles are read and reported on by faculty members or by committees of the faculty.

Principals clubs have used our yearbooks as a basis for their professional study for the year. Thus practical and valuable suggestions are made available to the whole group.

You have read the yearbooks and made use of them. Why not tell your fellow principals about how you have used them and how they have helped you? By so doing you will help both your friends and the Department.

AARON KLINE, *President*
Department of Elementary School Principals

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RÉSUMÉ [1]

Each year the Editorial Committee presents the reader with this concise statement of the yearbook. An attempt is made to touch upon the major contribution of each author and occasionally to raise pertinent questions. Judgment on any article should not be based upon the following summary but upon careful reading of the author's full statement. It is hoped that this preview will lead principals and others to extensive explorations of the yearbook's contents.

SOCIETY, whether primitive or civilized, provides some way for the introduction of the young into the wisdom and responsibilities of group life. In civilized communities this socialization process takes place to a large extent in institutions known as "schools." Schools are directed by "teachers" who select from the world the activities, facts, concepts, and ideals which the learner is to examine, to study, to experience, to memorize, to select, to evaluate, and to use.

Obviously in any school learning situation there are three major factors: (1) the learner, (2) the teacher, and (3) the thing to be learned (curriculum, facts, subjectmatter, activity, unit of work, or center of interest). The proper interaction between the three major factors results in learning. The pupil makes an "adjustment"—he identifies himself with the thought and spirit of the thing to be learned. He develops and changes.

As soon as the learner and the teacher start to learn or to teach (depending on the viewpoint) other factors are called into the process. Of major importance among these secondary factors are: (1) devices or aids, (2) methods, (3) principles, and (4) technics. All are important parts of the total learning process. No one type can be used to the exclusion of the others. No one is more important than the others to education, altho any one or several may be more dominant in a particular lesson or activity.

This yearbook centers attention on the first type of the secondary factors, namely, devices or aids. The purpose is to bring details into sharp focus. By so doing it will not be possible to exclude discussion of methods, principles, and technics. However, these phases of the learning process are not given primary attention.

In concentrating upon devices or aids the Editorial Committee will obviously disappoint those who deplore attention to these so-called

[1] The résumé has been prepared by the Research Division of the National Education Association for the Editorial Committee. Page numbers of any article may be found readily by locating the author's name in the index at the back of the yearbook.

routine and "petty" phases of teaching. These persons sometimes contend that devices and aids are necessarily extraneous. This yearbook shows that aids may be integral parts of the learning process. Every teacher is wise when he gives thought to the concrete and mechanical aspects of his duties. By so doing he may discover improvements which will release more time for the contemplation of the so-called "higher" realms of his duties. It is true that if devices are used purely by imitation, or by rule of thumb, the teacher has become a dumb slave to things. When a teacher gets to this stage he should leave the profession but no onus should fall upon the mechanics of instruction. After all, devices are tools which may fall into the hands of either idiots or geniuses.

AIDS IN MODERN EDUCATION [2]—Freeman emphasizes the value of aids as a means of enriching the learning experiences of children. In many instances it may be impossible to prove that teaching aids save time or money, but the broadening of the child's experiences is individually and socially worthwhile.

Cody believes that aids often simplify the learning process and thereby reduce the amount of effort required to understand abstractions. More than this, thru various aids school and life outside are more closely integrated.

Hays urges a new deal in education leading to the wider use of visual aids, particularly the motion picture film. He is greatly impressed by the industrial film as a means of acquainting pupils with the real processes in idustry, business, and manufacturing. Some readers will feel that too much enthusiasm for the industrial film may result in objectionable advertising in the schools.

ORGANIZATION FOR THE USE OF AIDS [3]—The Editorial Committee with the assistance of the Research Division of the National Education Association obtained replies from about 360 principals as to the aids used in their schools. Maps, globes, slides, and similar devices are used rather widely. Motion pictures and other devices requiring costly equipment are usually found in the large schools. About one-third of the principals indicated that they had no special interest in devices. Outside agencies, such as public libraries and museums, are called upon to supply many aids. Almost half of the principals reported that all of their courses of study specified the use of various devices. Altho not specifically revealed by the inquiry one receives the distinct impression that there is a gap between the potential classroom equipment as recommended by courses of study and the actual conditions provided by administrative authorities.

[2] See Chapter I.
[3] See Chapter II.

A second inquiry was sent to 320 superintendents of schools in cities over 30,000 in population. Over 61 percent returned inquiry blanks in useful form. About 30 percent of those replying indicated that they depend on a decentralized visual education department to supply teachers with aids. Thirty-three percent use a centralized school library. The aids most frequently supplied are lantern slides, pictures, books, silent motion picture films, and maps. The aids believed by the group as a whole to be used most effectively are, in order: lantern slides, pictures, maps, books, and silent films. Superintendents believe that principals need to enrich instruction thru aids to teaching (1) by inspiring teachers to use aids, (2) by organizing within each school the machinery for using aids efficiently, and (3) by acquiring a wide selection of aids for teachers to use.

Hoek believes that it is necessary for the principal to help teachers to overcome a certain inertia in connection with mechanical aids. Some teachers, of course, do not want to undertake "new" things but a majority are simply unskilled in the operation of special equipment and therefore unwilling to use it.

Gross outlines briefly the necessity for systematic and expeditious use of visual equipment. The first step is for the teachers to list the aids which would be helpful in supplementing the course of study. This information is carefully cataloged by months, school subjects, and teacher, and filed in the office. Requisitions to the central office are made out by the school office from these cards. When the materials arrive, monitors distribute, shift, and return them in accordance with published schedules.

Gregory summarizes the services of the central educational museum of Cleveland. The specific descriptions of how materials are purchased, cataloged, adjusted to learning, shipped to schools, and maintained in first-class shape should be helpful to principals. A principal can cooperate better within each school when he understands some of the problems of the central organization.

Whittinghill tells of the function of the central visual education department in Detroit. He points out first that the size and type of central organization supplying aids to teachers should vary in accordance with the needs of the school system. Some attention is given to the preparation of courses of study showing the necessity of making devices a part of the plans which teachers ultimately use.

PICTORIAL AND GRAPHIC AIDS[4]—Alexander begins the chapter with some practical suggestions on how flat pictures should be mounted for use and filing. It is obvious from this article that every school

[4] See Chapter III.

could have a helpful file at very little cost. It is clear too that the key to efficient use of flat pictures is a workable system of filing.

Brown suggests that pictures may be mounted in albums. The plan has very definite advantages in providing recreational and reference materials for individuals or small groups. However, for instruction in large groups the individually mounted pictures seems to be a more flexible system of filing.

Blood and Kaasa give specific examples of the use of pictures in connection with the teaching of geography. They suggest the following uses for pictures: (1) as sources of information, (2) as review materials, and (3) as testing materials. Many principals will find the suggestions on the use of pictures for testing particularly new and original.

Grassmuck discusses the standards to be kept in mind in selecting and evaluating maps, globes, and charts. Her suggestions as to the basic equipment for the elementary school deserve careful checking with the actual equipment of the typical school. Who, more than the principal, is responsible for maintaining the instructional supplies in first-class, up-to-date condition?

Saunders points out some of the possibilities of using maps with young children. Her suggestion that the simple construction maps of the local community help children to develop background for more complicated maps is something to be remembered. Construction activities which appear to the untrained eye as "play" are often the means for experience which integrate and enrich life. Such facts might be pointed out to skeptical laymen.

Crawford helps one to understand the possibilities of the pupil-made map. Her standards for map construction are useful general guides. Her specific instructions on why and how to have pupils prepare maps can be easily followed. Maps, like all other visual aids, must be made important parts of large instructional units.

Harper and Otto describe an effort which they made to measure the value of graphic instructional materials. Several groups of children studied a geographical unit in the usual manner, including textbooks, discussions, special reports, and projects. The experimental groups used the same content and methods but also had the advantage of supplementary charts and diagrams. Altho the results of the experiment are not particularly conclusive, the technics of the study, including the graph test, should lead principals to attempt similar investigations.

OBJECT MATERIALS [5]—Coleman points out the natural affinity which exists between schools and museums because they both find objects useful in carrying out their respective functions. He discusses the two major types of teaching procedures in connection with museum materials. First, instruction from exhibits at the museum, and second, the use of objects in the classroom. It should be obvious from this article that children will benefit greatly when public schools and museums work together toward certain common purposes.

Ramsey describes in considerable detail how children can prepare habitat groups for science and the social studies. Her explanation of the intricacies of plaster of paris, cardboard, and other materials used in the construction of exhibits should prove particularly helpful to classroom teachers.

Wolf discusses the various types of school exhibits. Among those described are the curio exhibit, the summer activity exhibit, the planned activity exhibit, the district exhibit, the single purpose exhibit, and the exhibit of snapshots. Each of these has its own definite purpose and must be planned accordingly.

Travers tells about the establishment of a museum within a single school. He reports how various kinds of materials may be mounted for display purposes. It is obvious from this article that almost every school could have object materials mounted in such a way as to be of great interest to children.

Walker describes the operation of a centralized children's museum in a large school system. This museum supplies materials to each school and in the case of this particular article the system is handled by the librarian. The key to the success of such a plan seems to be clean-cut organization, records, and definite schedules.

Heaton reminds us of the possibilities of blocks in the teaching of young children. He points out that many visual-sensory aids are not useful in the lower elementary grades because of the necessity for reading and other skills which the children have not yet acquired. Blocks, however, are relatively simple and seem to appeal to almost every child.

TRIPS AND EXCURSIONS [6]—Lobeck insists that the success of a field excursion depends in the first place upon planning. The person in charge must know first of all what the purpose of the trip is to be and must then lay out the whole procedure, step by step. Each person on the excursion must feel some responsibility and must have a definite goal.

[5] See Chapter IV.
[6] See Chapter V.

Bryan reminds us that the excursion is increasing in importance because of the necessity of bringing children into contact with genuine life experiences. Her brief descriptions of several excursions which took place in her school, together with their outcomes, clearly show that first-hand contacts arouse and develop worthwhile interests in children. It is up to each principal to administer his school so that excursions may become a regular part of the instructional activities.

Elliott shows us the possibility of excursions in the small town school. Parents, children, and teachers cooperated in visiting places of interest and in bringing back into the school exhibits and ideas for projects. A check-up of the year's activities revealed many splendid additions of the school's array of illustrative instructional materials.

Weaver suggests the possible types of excursions and field trips which could be taken in a large metropolitan city. He believes that the school journey may be the means of enlivening the traditional school of today and of bringing it in closer harmony with dynamic social change.

Daniels presents something of the thrill experienced by the members of her class when it went on an excursion to the beach. She tells of the original plans to study the characteristics of sea gulls, how weather conditions made this plan impossible, and how it was necessary to shift the purpose to a study of sea moss. This new-found interest led to the use of the sea moss in food which was served at a party. The party gave an opportunity for simple lessons in courtesy. The journey was obviously enjoyable as well as educationally worthwhile.

Morgan reminds us of the possibility of concert music. It should be possible to bring together hundreds, if not thousands, to a central point to listen to the best available artistic talent. He believes that these contacts with great artists hold possibilities for enjoyment and growth which cannot be found thru the ordinary musical activities of the classroom.

Price reports a survey made of the field trips carried on in 268 public elementary schools, located in forty-five states and the District of Columbia. He found that about one-third of the schools were utilizing trips to civic buildings, to industries, to parks, to museums, and to libraries. Relatively few of the schools were sponsoring trips to newspapers, banks, commercial offices, and institutions of higher education. Principals rated most of the field trips of great value. The types of excursions rated of highest value were those to libraries and museums. One of the great values of the excursion according to

Price is the opportunity given to the children to plan, execute, and evaluate their own activities.

SLIDES, STILL FILMS, AND OPAQUE PROJECTORS [7]—Barr discusses briefly the various types and uses of projectors. He devotes most of his article to the problems associated with lantern slides, still films, and similar types of visual materials. This treatment shows that each type of projector has its very important uses and definite limitations.

Hart discusses in great detail the specific uses of the stereopticon in instruction. He shows how lantern slides may be used in connection with geography, drawing, and other classroom activities. One of the unique suggestions has to do with the use of the lantern slide in connection with the teaching of reading.

Bonwell tells of the advantages of slides which are made by teachers and those that are made by the pupils. Not only do these slides give an outlet for creative interest, but they suggest the possibility of the pupils teaching one another.

Price devotes most of his article to an explanation of how pupils can make lantern slides. He describes rather fully the different types of materials which are used and tells the advantages and disadvantages of each. This article should be of considerable practical value.

Engel turns the attention of the reader from the lantern slide type to the opaque projector. It is probably true that fewer schools have the opaque projector than have the stereopticon. Both instruments have their advantages and both have rather definite limitations. The author convinces us that the opaque projector can be one of the teacher's most effective visual aids.

SILENT AND SOUND MOTION PICTURES [8]—Aughinbaugh discusses the motion picture as a basic tool in teaching. He considers it a natural development from the early pictographs developed by the prehistoric man. Man has always sought to record events exactly as they occurred and the motion picture is the answer to that wish. The motion picture and the printed page are the two greatest tools at the command of the teacher for communicating ideas.

Dale suggests some standards to be used by principals in selecting and in purchasing educational motion pictures. Pictures should harmonize with the objectives of the school; they should be factually accurate; they should be technically satisfactory; they should be effectively presented; they should be photographically accurate; and so on. These standards will suggest other criteria which may be set up by administrators for use in their own school systems.

[7] See Chapter VI.
[8] See Chapter VII.

Hollinger discusses at some length an effective technic for using motion pictures in the classroom. This procedure was developed by actual classroom use in Pittsburgh. He also suggests some general principles to be observed in the use of films in auditoriums.

Arnspiger discusses the advantages and uses of the sound film in the elementary school. He gives some of the minimum essentials as to the rooms to be used and the types of equipment. The rôles of the pupils and the teachers are discussed.

Hayward believes that the motion picture has important uses in assemblies. In the first place it can be used for the purpose of teaching facts. In some instances it is an aid to culture. It also has uses in connection with patriotic programs, safety instruction, and general entertainment.

DUPLICATING MACHINES AND TYPEWRITERS [9]—Spacht gives a systematic discussion of the possibilities of producing instructional materials within each school. He tells how arrangements were made for the school clerk to give a portion of her time to the preparation of tests, puzzles, blanks, and various other materials for use in connection with classroom instruction. One interesting turn to this idea is that the school secretary often attended professional lectures and her notes were transcribed for the benefit of the teachers of the school. In other cases notes, taken by one teacher at a professional meeting, were reproduced for all of the teachers of the school.

Wright points out the advantages of aids that are produced in the school by means of the mimeograph, the gelatin pad, and other similar devices. Her list of aids which can be used in reading, geography, and other school subjects should be helpful to some principals.

Forester describes an experiment wherein one group of pupils wrote compositions on typewriters and another group wrote them in their usual longhand. The question was to determine whether the typewriter, a device for duplicating, was a satisfactory instructional tool in the elementary grades. It was found that chiefly in the quality of the content of the compositions did the experimental group using the typewriters surpass the control groups. There was also some improvement in neatness and arrangement of the compositions due to the limitations placed by typewriters. One point, not discussed by this author, is whether or not the experience with typewriters in the elementary school develops bad habits which cannot be eliminated when later the person attempts to learn stenography for commercial purposes.

[9] See Chapter VIII.

RADIO AND SOUND EQUIPMENT [10]—Koon discusses the question of whether or not a principal should bring the radio into his school. He points out the need to enrich classroom instruction, to bring pupils into contact with life activities, and to train pupils in the appreciation of good radio programs. At the same time the author appreciates the fact that there is some reason for believing that many radio programs are far from being constructively valuable as educational aids.

Banker makes some suggestions as to how the radio may be used effectively. Early in the school semester he had his own teachers discuss whether or not they should bring radio programs into the school and how they might be used. With certain objectives definitely in mind certain radio periods were agreed upon. After some experimentation it was found useful to prepare the pupils in advance even for radio lessons in music appreciation. Other practical suggestions on the management of the programs have been briefly set forth in the article.

McCarthy discusses the problem of integrating radio broadcasts with the schedule of the school. She also has found it necessary to develop certain very definite technics for use before, during, and after the broadcasts. Only by following these principles can the time given to broadcasts be used as effectively as the same time used for the regular classroom activities.

Strohoefer describes a procedure for improving the ability of the students to discriminate in choosing radio broadcasts. His school acquired a portable radio set with a microphone attached. Pupils arranged programs which they could broadcast to other children of the school. They were encouraged to be very critical of their own efforts and to study the regular commercial broadcasts for the purpose of discovering effective technics as well as methods to be avoided.

Buckley and Connor describe some phases of radio instruction in Cleveland. They tell briefly how the work developed, how it has been used to teach pupils number work and many other subjects. As a result of this classroom instruction the conclusion has been reached that the ordinary radio lesson is probably more important as a supervisory device than as a teaching aid. That is to say, the usual radio lesson is so well organized and so purposeful that it sets a model for teachers to imitate in their regular class activities. The authors present the scripts of a science and a music broadcast which show a number of the rules which must be followed in an effective radio presentation.

Tyler lists and reviews briefly some of the available radio programs for general school use. He also reports a study of the broad-

[10] See Chapter IX.

casting activities of so-called educational broadcasting stations. These stations operated usually by universities are of greatest potential value in the education of older pupils and adults.

Lumley made a study of seventy-five school broadcasts. He found that they fell into four different types: dramatizations, narratives, musicals, and talks. All of the broadcasts had certain very definite defects which the author discusses at some length. The author also tells of the different types of radio broadcasting which may be used effectively in connection with the schools.

Brockway and Brockway report a survey of sound equipment found in various schools. They located about four hundred schools that had purchased centralized sound apparatus, and circularized them with a questionnaire. Quite a large percent of these schools answered their questions, among which there were a number of elementary schools. In summarizing the types of equipment which have been installed and the uses made of this equipment, the authors make numerous suggestions which will be of value to those who contemplate purchasing any equipment of this general nature.

Hultz reports an interesting study of the use of the phonograph in improving children's speech. The experiment was made with fourth-grade pupils who were allowed to record their oral narratives. In the course of telling stories every child made errors, such as incomplete sentences and repetition of words. By playing back the phonograph records the child was able to hear the nature of his difficulties and the teacher was able to assist him in overcoming bad habits. After a period of training it was possible by means of the phonograph to make other records which indicated clearly that definite progress had been made. The usefulness of the phonograph as a device in the improvement of speech is one which elementary-school principals may explore with great interest.

SUMMARY OF RESEARCH [11]—The Research Division has summarized in brief and interesting form the nature and results of a number of experiments with aids to teaching. Altho this summary makes no pretense at being inclusive of all the studies which have been made, it will do much to bring principals in contact with some well-known investigations. It should be clear from the material presented that every type of visual and auditory aid has its advantages. It should be also equally clear that each of these aids has certain definite limitations. The wise principal will of course utilize and evaluate aids to teaching with these limitations clearly in mind. There is need, of course, for further research in the field of aids to teaching. Many

[11] See Chapter X.

of the studies that have been made need to be repeated in exactly the same form so as to verify the conclusions. Other studies need to be made with slight variations from those which have thus far been reported. There is no better place for organizing and conducting this research than in the typical elementary school under the direction of a competent principal!

SOURCES OF AIDS[12]—Berman begins the chapter with a brief review of the types of teaching aids which may be obtained from various business and philanthropic organizations. He points out the usefulness of many of these devices and hastens to indicate the danger involved. It should be clear to any teacher or principal after reading this article that he cannot afford to allow the children in his school to be exploited either thru advertised products or thru any other device designed to advance some well-organized group. While it is true that the principal must be alert to the danger of propaganda and advertising, it is also true that these dangers offer splendid opportunities for teaching the children when and how to exercise critical judgment. If we learn by doing we certainly must learn to discount propaganda by understanding its methods and its content.

Lathrop presents a detailed list of the governmental agencies supplying visual aids. She points out that many state universities, libraries, and museums have visual aids to lend to schools. Perhaps the most helpful part of this article is the space given to the materials which are available from federal sources. Many principals are finding the leaflets and bulletins of the federal departments, not to mention motion pictures and slides, of inestimable value. A report of the new aids which are available is made from time to time in *School Life,* official journal of the federal Office of Education.

Horton reports on some of the agencies supplying picture materials. These sources have been discovered thru years of work in connection with public museums.

Persing summarizes some of the sources of teaching aids and presents a list of some of the well-known lists of available aids. Several of these masters lists should be included in the library of every principal. Some of them are issued annually, while others only report the results of a single investigation.

SUMMARY AND CONCLUSIONS—The use of devices and aids in teaching has existed from the very beginning. No matter whether the first teacher is considered as being a prehistoric caveman or some later historic figure, the fact remains that in conveying a message to his listeners he used some visual or auditory device. Often he drew upon

[12] See Chapter XI.

the sands of the seashore, or arranged stones in a certain order, or made sketches on the wall of the cave, or used one of a dozen different ways of conveying ideas by an appeal to the senses.

Thus it has been true that aids to teaching came into use as integral parts of instruction. There have been times, of course, when a few teachers have been so carried away by the possibilities of a single device that they have attributed to it universal and "cure all" properties. This tendency has led others to minimize the use of devices almost to the point of their complete neglect. It is apparent from the articles of this yearbook that both extremes are wrong. Devices and aids are tools which should be available to very teacher insofar as they may be useful.

It is evident from the present yearbook that the elementary-school principal has an important place in connection with devices in teaching. He should be the one to encourage the use of time-saving and effective aids in the classroom; he may be the one to train his teachers in how to use devices most effectively; he will be the one to purchase, and select in many instances, the visual and auditory equipment which is to be placed in the school; he must be the one who, thru the administration and organization, makes those aids available to every classroom; and he should be the one who will evaluate the use of the aids to determine why they are effective and how they can be made even more useful.

Aids to teaching are the means of enriching instruction, and therefore are essential in the instructional processes. They make it possible for the teacher to present ideas from many viewpoints and with many different appeals. Thru their use, every child, regardless of his personal limitations, will have an opportunity for unimpaired learning thru a variety of experiences.

THE INDEX at the end of this yearbook includes the topics and the names of contributors. Avail yourself of the key to the volume.—*Editorial Committee.*

CHAPTER 1

AIDS IN MODERN EDUCATION

EDITORIAL COMMENT

THERE ARE two common viewpoints regarding devices or aids among presentday educators. One group considers most aids as tricks which delude the unwary teacher into believing that teaching is a magical process. A second group believes that aids may be useful tools if their uses are fully understood by the classroom instructor.

Persons holding the first opinion are not very much interested in having teachers take courses in educational methods and devices. They urge teachers to study child nature, to delve deeply into psychology, and to take a broad viewpoint as to the social function of education. They believe that under this extensive type of training the teacher is better prepared to guide children. He is believed to be more adaptable in his technics than the teacher who has been exposed to direct and specific instruction in the use of devices.

Advocates of the second viewpoint are interested in the mechanics of teaching. They like to analyze the elements in the total learning situation—curriculum, methods, instructional materials, learner, and teacher. They seek to replace inefficient elements with those shown by experience to be more effective. They believe that the teacher must study the uses and kinds of materials of instruction just as surely as he does the laws of learning.

The Editorial Committee believes that both groups often tend to extremes. The first group may become so theoretical as to lose touch with the practise of instruction. The second group may become so mechanical as to destroy the buoyancy of teaching. Surely somewhere between the two there is a combination of learning opportunities which is the best that human intelligence, skill, and imagination can provide.

The contributors to the first chapter appear to take a middle ground. They are not afraid of devices. They consider all such aids as means to a better type of learning. They do not glorify or allow themselves to be hypnotized into an unthinking admiration of the mechanics of teaching. They believe that teaching moves forward not only because teachers have a broader social vision and a deeper understanding of child nature, but because teachers utilize more and better material aids in instruction.—*Editorial Committee.*

ENRICHMENT THRU AIDS TO TEACHING

FRANK N. FREEMAN
Professor of Educational Psychology, University of Chicago, Chicago, Illinois

IT IS HIGHLY APPROPRIATE that a yearbook of the Department of Elementary School Principals should be devoted to visual education. It is appropriate, first, on account of the importance of the subject. Ample evidence exists on the lack of concrete experience possessed by the average child as a basis for comprehending the principles of the physical, biological, and social sciences, or for appreciating works of literature and art. Evidence is also at hand to show that the various forms of visual instruction can supply this lack, if not as effectively as first-hand experience, at least much more effectively than can verbal description.

The direct, first-hand acquaintance of the child with the rich and varied life of the world is extremely limited. A few better favored children have the opportunity to explore the more prominent features of their own neighborhood and even by travel to extend the boundaries of their observation to other parts of their own country or to other countries. The automobile has served as a great widener of the range of experience for children as well as for adults.

The widening of experience thru travel may give much less enrichment, however, than it would appear superficially to give. It may give breadth at the expense of thoroness and detail. It is a mistake to assume that even a well-informed adult has a thoro acquaintance with his own neighborhood. The story is told of Louis Aggasiz that when asked where he expected to travel one summer he replied that he looked forward to a tour of his backyard. There was enough there which he did not know to occupy his attention for a whole summer.

The child's ignorance of his environment may be accepted as a fact. No one, I think, at least no teacher, will question it. It will also be pretty generally agreed that the child cannot learn all he should know about his environment by first-hand study. Much can be done to acquaint him with it by excursions, formal and informal. He will learn a good deal by his own spontaneous exploration, alone and in company with other children or his parents. But excursions are too expensive and time-consuming to meet the need. Something can be accomplished by bringing objects into the classroom; but the possibilities in this direction are also limited. More economical and rapid means must be used to give the child an acquaintance with his world.

For some unexplained reason, it seems commonly to be assumed that the necessity of supplying substitute or vicarious concrete experience is chiefly present in the upper grades or above. It is important

in the later grades, but our earliest and still most striking evidence on the poverty of the child's acquaintance with the physical world is drawn from studies of the child on entering school. Perhaps visual aids are thought to be less important for younger children because the particular materials which have been most widely used have not been designed for younger children. The captions on motion pictures, for example, cannot be read by them. But this does not indicate that motion pictures and other aids suitable for young children cannot be prepared. It simply points to a technical problem which needs to be solved.

That appropriate forms of aids to teaching may in part make up for the unavoidable meagerness of the child's direct knowledge of his environment has been repeatedly shown by careful scientific experiments. These experiments have shown that well-selected pictures, slides, stereographs, silent motion pictures, or talking pictures may add from 10 to 25 percent or more to the scores on tests of the subjects which have been studied. Not every question concerning the contribution which may be made by visual aids to education has been answered, but enough has been done to establish beyond the shadow of a doubt their great potential value.

If the value of visual aids has been established, why is an extended discussion of the subject particularly appropriate at this time? For two reasons. First, to establish their value is very far from providing schools with desirable visual aids. Many serious obstacles have to be overcome and many practical problems have to be solved before the schools can take advantage of this established fact. Second, the practical obstacles to taking advantage of the proved serviceableness of aids are especially formidable just now. The ax of economy during the recent unpleasantness has fallen with the most devastating blows on the newer branches of the educational tree, and it is going to take the most patient cultivation to grow again the tender shoots which have been so ruthlessly cut off. The older branches have had a chance to harden with time and to acquire the sanctity of age, so that even the dead and withered parts are protected from a wholesome pruning. But the new is always suspect, and hence it is sacrificed with only enough examination to establish its newness.

The danger to which all newer procedures are exposed is so fresh in our minds that it does not need further emphasis. The practical difficulties which stood in the way of the development of visual methods, even before they were hit by the economy wave, and which will persist even after recovery has taken place, deserve a few additional comments.

Tho it has been established that visual material suited to particular parts of the curriculum adds much to the effectiveness of teaching, it has not yet been determined in detail just what parts of the curriculum may be thus aided or just what materials are best suited to each part. Nor has the adaptation of the various aids to the successive stages of development of the child been fully worked out. Experiments have shown that aids which are not well adapted sometimes fail to improve instruction. The problem of the curriculum in relation to visual aids, therefore, needs further study.

The same may be said of method, including under this term the construction and organization of the materials themselves as well as the way they are incorporated into the complete process of instruction. Two isolated examples will illustrate the point. Is it or is it not desirable for the teacher to comment on a motion picture film while it is being shown? This is a disputed matter, with enough opinion or evidence on the two sides to make the question a real one. Again, should films be used in large or small units, or sometimes in large and sometimes in small? The answer has a marked bearing on the general procedure of using films.

One of the most formidable obstacles to the full utilization of the potentialities of visual aids lies in the fact that the teacher is not prepared to take advantage of them. The fundamental difficulty is lack of preparation. The fact that the teacher does not know how aids may be used in connection with his subject, that he does not appreciate their advantages, that he does not know how to manipulate projectors, and that he is inhibited by a general feeling of strangeness and the inertia of continuing in accustomed ways, conspire to make the introduction of visual aids difficult. Teachers in service must be given an opportunity to learn their possibilities as well as gain some familiarity with their technic. The oncoming generations of teachers must be taught their importance and use in the teachers college. Neither problem is as yet adequately dealt with.

I shall not do more than mention the problem of administrative organization. It will doubtless be treated in the yearbook. I close with the comment that we must expect the use of visual aids, like most other improvements in education, to add to its cost. The notion that we shall be able to save the cost of visual aids because pupils can learn more rapidly with these aids than without them, is fallacious. What other cost can be reduced because of them? Because the pupil learns more rapidly, will he leave school earlier? Assuredly not. Can we dismiss some of the teachers? No. The visual aid does not take the place of the teacher. Can we dispense with any other equipment? Not so far as I know.

We must justify visual aids, not on the ground of money saving but on the ground of the enrichment they afford. When the nation has learned how to manage its resources intelligently it will find that it can afford to pay for an enriched education, and that, in the long run, enriched education will pay, not thru immediate saving, but thru the increased productiveness of its citizens.

THE TERM "visual instruction" has been loosely and often narrowly interpreted. Many seem to have accepted it as meaning the use of picture projection on an illuminated screen. Furthermore, because of the novelty and great popularity of the motion picture, many seemingly extravagant claims have been made for visual instruction, which have not as yet been substantiated by careful experimentation. Individuals who make such sweeping statements as "Visual instruction will speed up civilization ten centuries in twenty years" or "Visual instruction will displace books in our schools" certainly have failed to keep in mind the fact that genuine learning results only from prolonged purposeful self-activity, in response to the challenging situations of a social and natural environment.

Broadly speaking, visual instruction is not, of course, a separate subject nor even a new procedure in the teaching process. It is rather merely a means to an end. Visual instruction simply means the presentation of knowledge to be gained thru the "seeing experience." The "seeing experience" has always been man's simplest and most natural means of gaining information.—Anna Verona Dorris, *Visual Instruction in the Public Schools*, Ginn and Co., 1928, p. 6.

EDUCATION ENLIVENED

FRANK CODY
Superintendent, Public Schools, Detroit, Michigan

THE MOST IMPORTANT AID to teaching a generation ago was the hickory stick. Now its use is prohibited in almost every classroom in this country. It is one of the few aids to teaching considered ineffective today. Recently, some selfish groups have advocated the return of public school education to that of our fathers. The question that should be raised with such groups is whether or not this return to former methods will include resurrection of that compelling rod upon which the schoolmaster placed so much reliance.

The problems of discipline grow rapidly fewer in the modern progressive public school. As such problems decrease there results a larger amount of time for children and teachers to work together constructively. Natural interests of children are recognized. Teachers understand the needs of children more sympathetically. Teachers know that children differ. They bring to children a wide variety of materials and devices to help them grow in human relationships as well as in formal knowledge.

Schools and classrooms become increasingly attractive places in which children may spend a large part of their days. There is a homelike, livable atmosphere that fits a variety of needs. Equipment is adapted to children. Walls are no longer barren and drab. There is an attempt to bring beauty and inspiration into all activities. In themselves, many of the decorations and pieces of equipment now found in most classrooms are fine aids to teaching.

Not so long ago the whole business of the school was thought to be drilling children in large amounts of formal knowledge. Most of the teaching was done with books. The rest was dependent upon written blackboard work or oral words of the teacher. We still believe that there is much basic knowledge of a formal kind that has to be learned. But we have found that different children and different people learn the same things in different ways. Teachers use a variety of things to teach the same ideas. Pictures amplify the words of books. Miniatures and models improve understanding over the pictures in some cases. Trips are made to the actual places to see real objects in some other lessons. Altogether, teachers use many supplemental materials to help children understand the ideas about which they read in their books. The aids to teaching are used generally as additional learning material.

Probably one of the reasons for the introduction of many of these aids in schools is that similar devices or plans have been found effec-

tive in business and industry. Many of the aids used by skilful teachers incorporate the basic principles of commercial advertising. In modern advertising, the picture tells the story. Color helps to draw the attention. The comparatively short printed story in the usual advertisement describes or amplifies the picture.

School exhibits are similar in many ways to displays of merchandise in stores. Attractiveness helps to heighten the interest of the observer. The display of the actual materials in cases or on open shelves is certainly more interesting than a printed description of the articles offered for sale. Use of real materials in schools helps to give pupils a clearer idea in the same amount of time, probably in less time, than it would take to read about these same things.

Many schools build up museums of their own. Articles placed there are either made by children or collected by them thruout the community. This activity makes a fine contact between the home and the community. Children learn that the school is not an isolated institution that has no connection with the rest of their lives. Parents are often interested in the work of their children when they are asked to help in the search for articles to be placed in the school museum. In turn, parents become more interested and cooperative in the activities of the school.

As our whole social organization changes, the school changes with it. The school takes over functions formerly cared for by the home and its environment. As industrial conditions change, the school has to change its whole curriculum to adjust to new ways of living and working. Materials and methods used in the school change constantly in an attempt to meet the needs of a rapidly changing social order. A comparison of the materials and methods of business, industry, and the home of today reveals almost a total dissimilarity to those of the same institutions of a generation ago. In the same way, materials and methods of the school have changed during that same time to fit better into the whole organization of the life in which the school is established as an integral part.

Many of the general values of aids to teaching now in use are rather easy to discover. Probably the most important value is that derived thru an enrichment of the materials of learning. Just as the early schools were barren in appearance and opportunity judged by present standards, so were they barren in materials for learning. As an example, social science in the elementary grades was the accumulation of a series of memorized and incompletely understood facts of geography. Now geography has been extended into social science that deals with a better understanding of man and his social relationships, the interdependence of man and his environment, and the

necessity for cooperative activity of all kinds. Social science classes use practically all of the different kinds of aids. Geography books are still the basic source of information. Maps of new and better kinds are increasingly important. More pictures and better pictures interpret facts difficult for children to understand. Moving pictures are brought into the classroom to provide even greater reality and interest. Radio programs are utilized to advantage. Materials and products of all kinds are exhibited. Posters are made by children. Models are constructed. Museum materials are collected and mounted for immediate study and future reference. Altogether, the abstract and difficult ideas and discussion of the textbooks are enlivened and reinterpreted in many different ways.

The use of many aids provides opportunities for children to learn in their differing ways. Those children who do learn most easily by reading have more books and better books than ever before. Other children learn better with some other kinds of teaching materials. It is quite generally granted that better learning results when pupils are exposed to a wide variety of teaching aids from which they are allowed to choose those which make the greatest individual appeal.

A fine example of the use of pictures is found in methods now used to teach beginning reading. Some methods depend almost entirely upon association of pictures and words. Children have a speaking vocabulary when they enter the first grade. Their speaking vocabularies vary according to the environment in which they have lived. Young children also recognize pictures of things with which they are acquainted. They can apply to these pictures or other tangible objects the words or names from their speaking vocabularies. The next step is quite simply the teaching of the written symbol which represents the picture or object and attaching the word to it. In the later stages of such beginning reading methods, emphasis is changed from the pictures to words and sentences. Even then reading is extended into a wider activity which is closely interrelated with the use of a number of aids to teaching.

In teaching arithmetic also it is believed that more is accomplished when the abstract number combinations are made real. Little children, first learning to add, count and manipulate objects of a concrete kind. Fractions are introduced by dividing real objects into halves and other fractional parts. Drill in addition and substraction is given real life interest by setting up an imitation grocery store in the classroom where purchases are made and computations carried out in connection. The list of activities of a real kind is almost as endless in the subject of arithmetic as in any other subject. As the number and type of aids increase and improve in schools, teachers become less

likely to teach subjects and more inclined to work with children as human beings.

Elementary-school principals constantly improve in their understanding of the true meaning of supervision. Training programs have pointed attention to the real business of the principal as that of helping to improve instruction. Intelligent use of a great number of aids will make a fine school. The aids described in this yearbook do not replace other means of teaching. They enrich the whole teaching program. They simplify the learning processes and reduce the effort required to understand abstract written and oral descriptions. They save time for the teacher in explanation and give him greater opportunities to be human with the children. As principals and teachers discover new and better ways to use existing aids and as they discover new materials and methods for teaching, so will they help to make the school a broader and more closely integrated part of the whole social pattern.

VISUAL EDUCATION represents a grouping of educational materials or devices and an organized department of instruction which is based, not upon subjectmatter, but upon a method of presentation. This method has as its essential feature the fact that it belongs to one of the senses. Such a situation is without parallel. We do not have departments of auditory education, of tactual, kinesthetic, gustatory, or olfactory education. What is the cause of this unique position of visual education and of what does visual education consist?

We may get at the fundamental cause of the unusual situation in which visual education finds itself by glancing at its history. Visual education, in the broad sense of the term, is, of course, not new. Models, maps, diagrams, pictures, all have been used for generations.—Frank Nugent Freeman, *Visual Education,* University of Chicago Press, 1924, p. 4-5.

THE NEW DEAL AND VISUAL AIDS

DUDLEY GRANT HAYS
Director Emeritus of Visual Education, Public Schools, Chicago, Illinois

EDUCATIONAL WORKERS thruout the nation are striving as never before to avail themselves of the most efficient means of instruction. They realize that the demands of the public to prepare the youth of our communities to take their places in the ranks of noble workers for the good of all call for the best available aids in their teaching endeavors. They agree with President Roosevelt that our schools are not as efficient as they should be. Like him they are willing to try a *new deal,* and if their experiment does not produce satisfactory results, they, like the President, are willing to make adjustments to meet new conditions.

Every day triumphs of human achievement are brought by radio to our ears from all parts of the world. Into our eyes is flashed impressive photography of the activities of human beings in science, industry, exploration, manufacture, art, and transportation.

The appeals to the mind thru the eye by the display of human achievement at the Century of Progress cannot be forgotten by the millions who were privileged to attend the Fair of 1933 in Chicago. To see those sights millions of attendants spent much time, energy, and money. Had they remained at home, they could have heard the addresses, the choruses, the bands, and the orchestras over their radios, but they would have missed the appeals thru the eye, and that was the impelling reason that brought them to the Fair. They came *to see things* and those sights cannot be erased from their memories.

Learning thru the senses—Fundamentally, the only way to reach and develop the mind is thru the senses. There must be a reaction of the mind upon the impressions it receives, and this reaction must result in some bodily activity on the part of the receiver. The impression coming thru the senses is the foundation for the reaction. The more pronounced and clear the impressions that are made upon the mind of the learner, the more efficient will be his development.

The sense of sight is the most acute, far-reaching, and the quickest of all senses. Thru it, aided by the telescope, the remotest material things are brought into consciousness. The microscope reveals the tiniest things of the universe known to mankind. The eye is the essential gateway thru which these instruments bring the impressions to the mind. Concepts of intermediate things are largely brought to the mind thru sight.

Visual appeals, by presenting objects, models, charts, photographs, stereographs, lantern slides, and motion pictures, furnish the pupil

with impressions for which language is simply a symbol. Whether we consider language in connection with literature, history, geography, or science, the foundation consists of sense impressions. Without numerous, first-hand impressions words are practically meaningless—hence the difficulty which pupils have in understanding the printed page.

We believe that slow progress in school work, and often failure, result from faulty presentation of fundamental impressions, which are essential to all study. The laborious efforts sometimes put forth in the schoolroom to draw out expressions from the pupils, suggest to us that teachers have failed to lay a foundation thru clear impressions of those things they wish the children to discuss.

Visual instruction provides the concrete element for fundamental notions in educational work. The great field so essential for good school work is that of training the powers of observation, and developing the ability of interpreting correctly. To lead children literally *to see things* and to trace the relationship between causes and effects are two of the great basic ideas we should not forget. These thoughts are emphasized in visual instruction as in no other way.

The value of visual instruction—To throw light upon all subjects required in the curriculum—in other words, to illustrate—is a prime notion underlying visual instruction. The Century of Progress was a demonstration of visual instruction on an enormous scale. Let us consider impressive lessons therefrom.

In the visits we made to the Century of Progress, we were deeply impressed by the many observers at the various booths wherein were being shown motion picture films portraying the production of so-called raw or basic materials, their harvesting and processing in all stages, and their final distribution to ultimate consumers. The fact that the beholders could see human beings and machinery in action, and fashioning the materials into articles of usefulness, seemed to be the center of interest for both old and young. The masses of people before such booths were absorbed in watching the film demonstrations.

We were led to recall schoolroom experiences where visual aids were consistently used. Keeping in mind the fact that we are now addressing ourselves to those engaged in teaching, we wish to revert for a few moments to classroom experience wherein suitable films were used as the basis for lesson presentation, development, and intelligent understanding of the subjectmatter under consideration. The question had been raised in recent years as to whether or not there was a gain in teaching efficiency enough to justify the cost in time, energy, and money in equipping schoolrooms for using films in teach-

ing. The answer was sought by a very wealthy man who was willing to defray all expenses attendant upon a worthwhile experiment covering a nationwide group of schools and for a period of time devoted to instruction in geography, science, industry, and health in suitable grades for such study. The lessons were given daily for ten consecutive weeks to eight classes in each of twelve cities. The same carefully outlined subjectmatter was presented to all of the classes, but one-half of them had the presentation by means of suitably prepared films, while the other half did not have the film lessons. The classroom teachers of these groups had nothing to do with outlining the lessons, preparation of examination questions on the same, or marking the answers. It was a long, thoro experiment and final results showed that the film-taught classes excelled in comprehension of the lesson contents more than 24 percent over those not using the film method. Their sustained interest in the lessons was marked to a gratifying degree.[1]

Such a percentage of gain in efficiency in teaching should enlist our efforts to bring about a new deal in school work. Any industrial institution that can bring about such a gain in output by a change in its operation will not delay long in putting in new equipment to attain such an end.

Special values of scientific and industrial films—At the Century of Progress, while industrial and scientific exhibits were elaborate in their material presentations, yet their sponsors appreciated the added value of using suitably prepared films to put over the " thought work " involved in the exhibits. The film demonstrations drew the crowds everywhere they were used. When the films stopped, the observers moved on to other exhibits. Practically no teaching discussions followed the film presentations, altho we believe that such discussions would have added much to their value.

This leads us to the consideration of the topic of industrial films in educational work as a substitute for discarded films from the public theater, which too often contain scenes objectionable from the viewpoint of schoolroom uses. In the language of the mining people, industrial films are " full of paying dirt " when used in the classroom by a skilful teacher.

Industries appreciate the contribution of motion pictures to public relations. Deleted of objectionable subjectmatter, such films are useful teaching aids and they are freely obtained in comparative abundance. Industrial films are serving an immense purpose in furnishing first-hand, impressive insights into the basic industries of the

[1] For further objective evidence in the motion picture field see Chapter VII of this yearbook.

human race. The value of industrial films, from the standpoint of the producer, is one thing. Their value from the standpoint of an educational system, as generally understood, may be quite another thing. Primarily we are interested in educational work, whether that work be in the day school, the evening school, or the community center.

The motive of industrial organizations in producing and circulating films concerning their work does not interest us. They wish to carry on a species of indirect, if we may use that term, advertising of their products. That desire is not to be condemned. If the films produced by them be of a good quality and full of worthwhile subject-matter, carrying into the consciousness of the observer ideas for betterment, they should be welcomed as educational aids by teachers.[2]

The problems of living beings and the ways they solve them are always fundamental. In considering industrial films we emphasize the fundamental necessities of life—food, clothing, and shelter. Films that deal with food topics portray the various ways of producing and distributing foods. Films related to clothing take us to the sources of raw material and trace the various processes of production, manufacture, and distribution. Studies related to those raw materials which go into the building of our homes, whether they be humble or elaborate, again take us to realms of original sources, showing us the occupations concerned in the preparation of those materials, their elaboration in all their phases, until finally assembled into our dwelling houses equipped with the most modern sanitary devices.

All such industrial films are of importance in our educational work. They all concern the occupations of human beings. The greatest of all occupations is that of producing. Maximum production leads to peace; minimum production leads to scarcity, want, strife, bloodshed, and a fight for life. To learn how to produce abundantly, economically, readily, regularly, easily, and efficiently are all of primary importance to the human race. Industrial films which help to bring about an understanding of production, whether of raw or of manufactured materials, certainly deserve the consideration of educators.

In these film trips to the sources of raw materials we are given a more broadened view of geographical work than we could otherwise get. The methods of travel, the routes of travel, and the sections of the world involved are all filled with interest. The people visited, their homes, occupations, and the divisions of labor in which they are engaged, all have a charm for us.

[2] Many educators would not accept the viewpoint of this paragraph. Since the question is an open one, with much to be said on both sides, the reader is referred particularly to Chapters VII and XI for further discussion.—*Editorial Committee.*

Films also show methods of transportation, whether they are the very simple ones where burdens are carried by men and animals, or hauled by teams of various kinds in carts, wagons, or on trucks. All these, as seen in action in the motion picture reel, give an impression that can be obtained in no other way. The process of manufacture, with the more and more complicated machinery involved, and the steps from the primitive style in manufacture up to the latest word in any line, are all full of interesting and helpful suggestions. More and more it dawns upon the assembled pupils who witness such films that presentday conditions call for an adjustment in one's preparation for participation in life's activities, and it also is made evident that in all of these actions or processes the human being is essential. We simply need a different preparation to enter into the world's work of today than was required formerly.

Conclusion—The writer believes that films, properly used, are an active stimulant to better living, better service, and better citizenship. These lessons are acquired thru seeing people in action. Meeting the results of their action emphasizes the advantage of employing approved methods. Attention is called to the greatly improved regulations in factories. Obedience to law, for the good of all, quietly comes to the fore as the devices for safety are shown in the factory, in the community, and in the home. Economic loss due to carelessness is brought out, not in an obtrusive, but in a quiet effective way. The value of industrial films finds a rating not contemplated by the manufacturer in his original plan of putting his organization and its work on the screen.

Aside from industrial films mentioned, there are numerous other devices and aids in visual instruction which are excellent for classroom use. Those who visited the Century of Progress exhibition hardly need to be reminded of the posters, illuminated photographs, slides, models, demonstrations, mechanical displays, talking books, and radios used to convey scientific and advertising facts. Such services need no apology, but on the contrary commend themselves to thoughtful leaders in education work. Why not emulate the example set by President Roosevelt and demonstrate our courage in trying a ***new deal*** in teaching procedures?

CHAPTER II

ORGANIZATION FOR THE USE OF AIDS

EDITORIAL COMMENT

THE PURPOSE of this chapter is to discuss the extent and need for administrative organization in connection with aids to teaching. In one article are shown the devices which principals report are used most frequently and most effectively. Another study indicates the nature and extent of central agencies sponsored by superintendents for the distribution of aids. The two articles describe in some detail the functions of these central distributing agencies. Two other articles deal with some of the problems facing each principal who wishes his faculty to utilize effectively the available aids.

If the reports of the principals are taken as representative of conditions, one must conclude that many teachers use relatively few aids. Maps, books, pictures, lantern slides, and similar devices appear to be used rather widely, but the newer inventions of motion pictures and radio are relatively uncommon. If these results are taken as representative of the better city schools then enrichment, insofar as devices are concerned, has far to go in the small cities and rural areas.

The machinery used in cities to distribute aids from a central supply appears to vary greatly. This variation is, of course, no adequate measure of the enrichment which exists. In one city the principal in each school may be so alert as to insure a wealth of devices without much aid from the superintendent's office. In other cities the principal's organization within the school may be so inefficient as to fail to transmit to the teachers the opportunities offered by a central distributing agency.

Too much stress cannot be placed upon the importance of the principal in the administration of aids. If the principal does not help teachers to obtain equipment with the minimum of disturbance to classroom routine, and if he does not arrange for demonstrations of the best ways to use the various aids—then he has only himself to blame when the devices fall into disuse. Equipment that is collecting dust upon shelves is often objective evidence of the lack of supervisory leadership.

For those interested in the administrative aspects the bibliography at the end of the chapter will prove to be useful.—*Editorial Committee.*

A SURVEY OF THE USE OF TEACHING AIDS[1]

IN LOCATING those principals who were interested in various aids to teaching, the Editorial Committee sent an inquiry form to about five thousand paid and unpaid members. Slightly over 7 percent of these members returned the inquiry with their comments. Beyond serving as a means of establishing contacts the questionnaires give a clue to practises in some of the larger school systems and in the larger school units. The data are not presented as "typical" of elementary-school practises thruout the United States. Altho replies were received from cities of all sizes located in a majority of the states, Table 1 shows that more than half of those replying were located in the largest cities.

TABLE 1—CITY SIZE AND SCHOOL ENROLMENT REPRESENTED BY THE REPLIES TO INQUIRIES

City Size	56 Schools over 1000		171 Schools 500-1000		139 Schools under 500		Total 366 schools	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Over 100,000	48	85.7	103	60.9	49	35.8	200	55.2
50,000-100,000	3	5.3	23	13.6	12	8.8	38	10.5
30,000- 50,000	1	1.8	8	4.7	11	8.0	20	5.5
10,000- 30,000	1	1.8	24	14.2	27	19.7	52	14.4
5,000- 10,000	2	3.6	3	1.8	17	12.4	22	6.1
2,500- 5,000	1	1.8	2	1.2	5	3.6	8	2.2
Under 2,500	..	....	6	3.6	16	11.7	22	6.1
Total	56	100.0	169[a]	100.0	137[a]	100.0	362[a]	100.0

[a] Two cases from Alaska and Hawaii have been omitted from each of columns 4 and 6 thereby reducing the total number of cases in column 8 by four. All other tables add up to 366. Percents in Table 1 are figured on basis of 362 cases.

Aids to teaching used systematically and regularly—Principals were asked to check, on the inquiry form, the aids to teaching which were used regularly in their own schools. The replies on this question are shown in Table 2.

Points to note in Table 2 are as follows:

(1) Maps are the teaching aids most frequently reported by all schools.

(2) Other devices reported in frequent use include globes, phonograph records, pictures, charts, posters, and exhibits.

(3) Some variation exists on the basis of school size. For example, slides are eighth in frequency of mention in the smallest schools, but second in the case of schools over one thousand in enrolment. This difference probably means that in

[1] This article has been prepared by the Research Division of the National Education Association for the Editorial Committee.

common practise, schools with large enrolments are more likely to be equipped with projection machines.

(4) Apparently to make up for the above difference the smaller schools use mounted and unmounted pictures. This type of device is third in frequency in the schools with less than five hundred pupils and sixth in the largest schools.

(5) Silent movies were reported by 52 percent of the schools, but sound films in only 3 percent. Here as in the case of other devices requiring expensive equipment, the school with one thousand or more pupils is the favored one.

(6) The radio was reported by 40 percent of the small schools and by 61 percent of the large units.

(7) Books, printing, stereoscopes, and gardens were not included in the checklist of the inquiry form, and for this reason were reported by relatively few schools.

TABLE 2—AIDS TO TEACHING USED REGULARLY AND SYSTEMATICALLY IN SCHOOLS

Teaching Aids	56 Schools over 1000		171 Schools 500-1000		139 Schools under 500		366 Schools all sizes	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Aquariums	36	64.3	82	48.0	50	36.0	168	45.9
Books, magazines, and libraries[a]	6	10.7	13	7.6	13	9.4	32	8.7
Charts and graphs	51	91.1	150	87.7	115	82.7	316	86.3
Exhibits	45	80.4	145	84.8	103	74.1	293	80.1
Gardens, flowers, and plants[a]	1	1.8	8	4.7	5	3.6	14	3.8
Globes	49	87.5	162	94.7	129	92.8	340	92.9
Maps	56	100.0	170	99.4	131	94.2	357	97.5
Museums	27	48.2	57	33.3	41	29.5	125	34.2
Phonograph records	53	94.6	160	93.6	119	85.6	332	90.7
Pictures	48	85.7	155	90.6	129	92.8	332	90.7
Posters	48	85.7	145	84.8	115	82.7	308	84.2
Printing, duplicators, and school paper[a]	2	3.6	10	5.8	10	7.2	22	6.0
Radio	34	60.7	80	46.8	56	40.3	170	46.4
Silent movies	36	64.3	96	56.1	57	41.0	189	51.6
Slides and still films	54	96.4	156	91.2	101	72.7	311	85.0
Sound movies	3	5.4	5	2.9	2	1.4	10	2.7
Stereoscopes[a]	3	5.4	7	4.1	7	5.0	17	4.6
Trips and excursions[a]	1	1.8	5	2.9	5	3.6	11	3.0
Miscellaneous	18	32.1	33	19.3	21	15.1	72	19.7

[a] Not printed on the inquiry blank.

Devices of special interest to principals—The inquiry form gave principals an opportunity to report the aids to teaching which were of special interest to them. It was hoped by this means to discover (1) the devices in the focus of attention today, and (2) the aids which lend themselves readily to the principal's efforts. Table 3 summarizes these data.

Table 3 includes these points of interest:

(1) Only in one case—the use of slides—did more than 50 percent of the principals indicate a specialized interest. This item was mentioned from 42 percent in the small school units to 64 percent in the large.

(2) The second device in frequency of mention (33 percent) was that of mounted and unmounted pictures.

(3) About one in four principals were especially interested in exhibits, maps, and silent movies.

(4) Principals in the larger schools are more likely to be interested in museums, silent movies, and slides than are the small school executives. On the other hand, the principal of the small school is more apt to have a special interest in exhibits, maps, pictures, radio, and charts. The crux of this difference probably lies in the auditorium and costly equipment usually required for the projection of still and moving pictures.

(5) Only about one principal in ten had a specialized interest in museums, phonograph records, or posters.

TABLE 3—AIDS TO TEACHING IN WHICH PRINCIPALS ARE PARTICULARLY INTERESTED

Teaching Aids	56 Schools over 1000		171 Schools 500-1000		139 Schools under 500		366 Schools all sizes	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Aquariums	5	8.9	8	4.7	10	7.2	23	6.3
Books, magazines, and libraries[a]	...	....	...	....	...	....	...	....
Charts and graphs	8	14.3	29	17.0	25	18.0	62	16.9
Exhibits	9	16.1	48	28.1	39	28.1	96	26.2
Gardens, flowers, and plants[a]	...	....	...	....	...	....	...	....
Globes	2	3.6	6	3.5	5	3.6	13	3.6
Maps	8	14.3	35	20.5	38	27.3	81	22.1
Museums	11	19.6	17	9.9	16	11.5	44	12.0
Phonograph records	7	12.5	25	14.6	18	12.9	50	13.7
Pictures	14	25.0	52	30.4	54	38.8	120	32.8
Posters	8	14.3	27	15.8	18	12.9	53	14.5
Printing, duplicators, and school paper[a]	...	....	...	....	...	....	...	....
Radio	6	10.7	29	17.0	25	18.0	60	16.4
Silent movies	19	33.9	39	22.8	27	19.4	85	23.2
Slides and still films	36	64.3	92	53.8	59	42.4	187	51.1
Sound movies	1	1.8	3	1.8	1	.7	5	1.4
Stereoscopes[a]	...	....	...	....	...	....	...	....
Trips and excursions[a]	...	....	...	....	...	....	...	....
Miscellaneous	11	19.6	38	22.2	20	14.4	69	18.9

[a] Not printed on the inquiry blank.

Aids supplied as a part of the regular equipment of the school system—Principals were asked to report the aids and devices supplied regularly by the school system. The checklist was not exhaustive as it was limited chiefly to the items previously listed on the inquiry blank. Table 4 presents a summary of the replies.

Several points to be noted in connection with Table 4 are as follows:

(1) Maps and globes are the two aids to teaching supplied regularly by 80 percent or more of the school systems.

(2) Close to 50 percent of the principals reported slides and phonograph records as a part of the regular equipment.

(3) About one principal in four received regularly, allotments of silent movies and charts.

(4) In connection with devices requiring costly equipment (silent movies, slides, radio, and sound films) the large school seems to be favored over the school enrolling only five hundred pupils. On the other hand, the principals of small schools reported receiving phonograph records and school museums more frequently than other administrators.

TABLE 4—AIDS TO TEACHING SUPPLIED REGULARLY BY THE SCHOOL SYSTEM

Teaching Aids	56 Schools over 1000		171 Schools 500-1000		139 Schools under 500		366 Schools all sizes	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Aquariums	7	12.5	24	14.0	10	7.2	41	11.2
Books, magazines, and libraries[a]	...	....	...	....	...	....	...	....
Charts and graphs	15	26.8	45	26.3	35	25.2	95	26.0
Exhibits	8	14.3	26	15.2	17	12.2	51	13.9
Gardens, flowers, and plants[a]	...	....	...	....	...	....	...	....
Globes	47	83.9	136	79.5	107	77.0	290	79.2
Maps	47	83.9	151	88.3	122	87.8	320	87.4
Museums	3	5.4	11	6.4	9	6.5	23	6.3
Phonograph records	18	32.1	76	44.4	67	48.2	161	44.0
Pictures	8	14.3	30	17.5	21	15.1	59	16.1
Posters	5	8.9	16	9.4	15	10.8	36	9.8
Printing, duplicators, and school paper[a]	...	....	...	....	...	....	...	....
Radio	9	16.1	16	9.4	10	7.2	35	9.6
Silent movies	21	37.5	53	31.0	30	21.6	104	28.4
Slides and still films	38	67.9	77	45.0	64	46.0	179	48.9
Sound movies	2	3.6	...	....	...	....	2	.5
Stereoscopes[a]	...	....	...	....	...	....	...	....
Trips and excursion[a]	...	....	...	....	...	....	...	....
Miscellaneous	6	10.7	13	7.6	16	11.5	35	9.6

[a] Not printed on the inquiry blank.

Aids purchased by the teachers or the parent-teacher association and from funds collected within each school—When devices are not supplied regularly by the school department they may be supplied by the teachers themselves. To avoid this drain upon those whose salaries are not designed to carry this expense, some principals utilize school funds collected from entertainments. In other cases the parent-teacher association makes funds available. Table 5 shows the devices most frequently obtained from the above sources.

It should be noted in Table 5 that:

(1) Almost 50 percent of the principals reported the acquisition of pictures thru one of the non-official sources.

(2) One in three reported obtaining phonograph records, radios, and exhibits by means other than the regular school system supplies.

(3) About one-fourth obtained aids in the nature of aquariums, slides, and posters.

(4) In the case of practically all of the aids relatively more of the large schools reported outside aid. This may be due to the greater probability of having a parent-teacher association, the greater probability of the large schools having funds from entertainments, or to the probability of higher salaries among the teachers of the large schools located in cities of considerable size.

TABLE 5—AIDS TO TEACHING PURCHASED THRU TEACHERS, PARENTS, AND OTHER NON-OFFICIAL SOURCES

Teaching Aids	56 Schools over 1000		171 Schools 500-1000		139 Schools under 500		366 Schools all sizes	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Aquariums	19	33.9	37	21.6	37	26.6	93	25.4
Books, magazines, and libraries[a]	3	5.4	4	2.3	8	5.8	15	4.1
Charts and graphs	19	33.9	39	22.8	22	15.8	80	21.9
Exhibits	19	33.9	48	28.1	34	24.5	101	27.6
Gardens, flowers, and plants[a]	...	....	...	....	...	....	...	....
Globes	2	3.6	7	4.1	6	4.3	15	4.1
Maps	2	3.6	3	1.8	4	2.9	9	2.5
Museums	8	14.3	17	9.9	15	10.8	40	10.9
Phonograph records	22	39.3	57	33.3	45	32.4	124	33.9
Pictures	27	48.2	86	50.3	59	42.4	172	47.0
Posters	16	28.6	42	24.6	27	19.4	85	23.2
Printing, duplicators, and school paper[a]	...	....	...	....	...	....	...	....
Radio	19	33.9	54	31.6	40	28.8	113	30.9
Silent movies	11	19.6	27	15.8	27	19.4	65	17.8
Slides and still films	13	23.2	51	29.8	27	19.4	91	24.9
Sound movies	1	1.8	2	1.2	...	....	3	.8
Stereoscopes[a]	...	....	...	....	...	....	...	....
Trips and excursions[a]	...	....	...	....	...	....	...	....
Miscellaneous	3	5.4	21	12.3	11	7.9	35	9.6

[a] Not printed on the inquiry blank.

Devices for teaching made or obtained by the pupils—When devices are not obtainable by the means previously discussed, they may be acquired thru the pupils. Not infrequently, there is a fine learning opportunity for pupils in the construction of a particular device. Principals were asked to indicate the devices which pupils made or obtained. Table 6 shows the replies to the question.

Points to be noted in Table 6 are as follows:

(1) Fifty-one percent of the principals reported that the pupils made or obtained posters. The probabilities are that these posters are health charts, illustrations of healthful foods, pictures of athletics and proper exercising, historical cartoons, and similar projects associated with modern teaching.

(2) Exhibits were second in frequency of mention (39.3 percent) and charts were third (32.5 percent). These devices as well as posters are commonly associated with the progressive practises of today.

(3) About one in ten principals reported that pupils could make or obtain school museums, slides, maps, and aquariums.

(4) The percents in Columns 3, 5, and 7 do not indicate any great differences on the basis of school size. Posters seem to be reported with exceptional frequency in the small schools as compared with the larger units. Exhibits and school museums were reported most frequently in the largest schools.

TABLE 6—AIDS TO TEACHING MADE OR OBTAINED BY THE PUPILS

Teaching Aids	56 Schools over 1000		171 Schools 500-1000		139 Schools under 500		366 Schools all sizes	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Aquariums	7	12.5	17	9.9	13	9.4	37	10.1
Books, magazines, and libraries[a]	...	....	...	....	...	....	...	....
Charts and graphs	21	37.5	55	32.2	43	30.9	119	32.5
Exhibits	24	42.9	70	40.9	50	36.0	144	39.3
Gardens, flowers, and plants[a]	...	....	...	....	...	....	...	....
Globes	...	....	...	....	...	....	...	....
Maps	4	7.1	23	13.5	11	7.9	38	10.4
Museums	12	21.4	21	12.3	24	17.3	57	15.6
Phonograph records	1	1.8	3	1.8	2	1.4	6	1.6
Pictures	23	41.1	70	40.9	45	32.4	138	37.7
Posters	21	37.5	96	56.1	71	51.1	188	51.4
Printing, duplicators, and school paper[a]	...	....	...	....	...	....	...	....
Radio	1	1.8	1	.6	3	2.2	5	1.4
Silent movies	...	....	3	1.8	5	3.6	8	2.2
Slides and still films	5	8.9	23	13.5	20	14.4	48	13.1
Sound movies	...	....	...	....	...	....	...	....
Stereoscopes[a]	...	....	...	....	...	....	...	....
Trips and excursions[a]	...	....	...	....	...	....	...	....
Miscellaneous	9	16.1	21	12.3	11	7.9	41	11.2

[a] Not printed on the inquiry blank.

Source and type of teaching aids obtained in the community—Principals were asked to list the agencies from which they obtained various school devices. Table 7 summarizes the replies given to this question.

Points worth noting in Table 7 are as follows:

(1) Out of 366 schools 245 reported obtaining pictures from agencies outside of the school building itself. One hundred and eighty or 73.5 percent of those answering this question received these aids from the public library.[2]

(2) One hundred and fifty-four principals reported that they obtained exhibits from outside groups. Seventy-three or 47.4 percent of this number received these exhibits from local museums. Relatively few reported business or industry as the source of this type of teaching aid.

(3) Slides were obtained by 142 schools chiefly from the public libraries or the local museums.

[2] The splendid possibilities for cooperation between public libraries and public schools have been set forth in the 1933 yearbook of the Department.

TABLE 7—SOURCE AND TYPE OF TEACHING AID OBTAINED FROM OUTSIDE AGENCIES

Teaching Aids	Local													State				Federal	
	School system	Department of visual instruction	Public library	Museums	Children's museum collections	Art museums and galleries	Parks, gardens, and zoos	Colleges and universities	Cultural clubs	Civic associations	Business and industry	Homes and individuals	Health department	State department of education	State library	State museum	State health department	Federal government	Total
No aids listed	14	13	91	32	7	8	3	11	1	2	3	3	..	1	3	2	..	1	195
Aquariums	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Books, magazines, and libraries[a]	7	..	70	..	..	..	..	..	..	2	4	..	..	..	..	..	..	..	83
Charts and graphs	6	2	7	10	1	..	..	1	..	1	4	..	1	..	..	..	..	..	33
Exhibits	16	7	13	73	13	4	4	7	1	1	7	1	1	1	1	4	..	..	154
Globes	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2
Lectures[a]	..	..	3	8	..	2	..	1	2	1	2	..	..	..	..	..	..	..	19
Maps	1	1	8	..	..	..	..	..	..	1	2	..	..	1	..	..	..	..	14
Motion pictures	12	10	2	25	1	1	..	10	..	1	3	1	..	1	..	1	1	1	70
Museum material	..	..	..	5	1	..	..	1	..	..	..	1	..	..	..	..	..	..	8
Musical instruments[a]	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
Phonograph records	7	1	8	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17
Pictures	10	8	180	15	5	19	..	1	..	1	2	1	1	1	1	..	..	..	245
Posters	3	5	15	2	1	..	..	1	..	3	4	..	..	..	..	..	..	..	34
Slides	14	13	24	50	3	10	..	6	..	1	6	..	..	10	..	5	..	..	142
Stereographs[a]	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	5
Trips and excursions[a]	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2

[a] Not printed on the inquiry blank.

(4) Books and motion pictures were the other types of aids received from outside of the school. In the majority of cases these devices were obtained from the public libraries or the local museums.

(5) One hundred and ninety-five principals indicated that help could be secured from non-school agencies but the particular type of aid was not specified.

Keeping abreast of progressive tendencies in the development of aids to teaching—How do principals keep their schools informed as to the nature and the use of the various new developments in the field of aids to teaching? The replies to this general question are given in Table 8.

TABLE 8—MEANS USED TO KEEP SCHOOL ABREAST OF MODERN VISUAL AIDS

Means	56 Schools over 1000		171 Schools 500-1000		139 Schools under 500		366 Schools all sizes	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
No special means	4	7.1	8	4.7	2	1.4	14	3.8
Principal keeps up	31	55.4	84	49.1	71	51.1	186	50.8
Reports and bulletins	35	62.5	94	55.0	80	57.6	209	57.1
Committee of teachers	20	35.7	63	36.8	41	29.5	124	33.9
Each teacher helps	15	26.8	59	34.5	56	40.3	130	35.5
Intervisitation	23	41.1	62	36.3	51	36.7	136	37.2
Miscellaneous	1	1.8	10	5.8	9	6.5	20	5.5

It is interesting to note the following points in Table 8:

(1) Fifty-seven percent of the principals utilize various professional reports and bulletins.

(2) In 51 percent of the cases the principal himself assumes major responsibility for keeping informed.

(3) About one-third of the principals reported each of the following procedures in insuring modern practises in their schools: (a) intervisitation of teachers, (b) dependence upon each teacher to keep up, and (c) activities of a committee of teachers.

(4) Almost 4 percent of the principals reported that they made no special effort to keep their school abreast of new aids to teaching.

(5) Principals in the large schools appear to depend more upon bulletins and reports than do executives of small units. The latter, however, reported more frequently that reliance was placed on each teacher keeping himself informed.

The course of study and devices in teaching—Principals receiving the inquiry form were asked to indicate whether or not their courses of study suggested the use of specific aids to teaching. The replies are summarized in Table 9.

Points to note in Table 9 include the following:

(1) Almost 92 percent of the principals reported that the courses of study in their communities specified the use of various aids to teaching. Half of these indicated that devices were recommended in all of their courses.

(2) Seven percent reported that their courses made no recommendations as to the use of aids to teaching.

(3) Relatively more of the administrators of large schools over one thousand in enrolment reported "devices specified in all subjects." There is great probability that these large schools are in the biggest cities where there is likely to be a detailed and printed course of study.

TABLE 9—EXTENT THAT AIDS TO TEACHING ARE SPECIFIED BY COURSES OF STUDY

Answer	56 Schools over 1000		171 Schools 500-1000		139 Schools under 500		366 Schools all sizes	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
No	1	1.8	12	7.0	13	9.4	26	7.1
Yes in a few subjects	20	35.7	78	45.6	69	49.6	167	45.6
Yes in all subjects	34	60.7	80	46.8	55	39.6	169	46.2
No answer	1	1.8	1	.6	2	1.4	4	1.1

Summary and conclusions—Three hundred and sixty-six principals of schools located in the various states, Alaska, and Hawaii, answered an inquiry form on aids and devices in teaching. Some significant points were as follows:

(1) Maps, globes, phonograph records, pictures, charts, slides, posters, and exhibits were (in this order) the devices used most regularly by schools of all sizes. Large schools enrolling over one thousand pupils reported more frequently the use of motion pictures, sound films, and other equipment requiring costly projection devices. Would it be possible thru a centralization of equipment to provide small schools with a greater variety of aids?

(2) About 50 percent of the principals reported a special interest in slides and still films. Not more than one-third of the principals reported a special interest in any other kind of device. Interest in "sound movies" was reported by less than 2 percent. Apparently a large proportion of principals have no special interests in the field of devices in teaching. Does this imply a lack of interest in the specific and detailed aspects of instruction?

(3) School systems supply regularly such common devices as globes and maps. Less than 50 percent of the systems provide such devices as slides, phonograph records, pictures, and silent movies. Does this indicate a tendency for the purchasing of supplies to fall into fixed grooves and ruts?

(4) About 47 percent of the principals reported that pictures were obtained from the teacher, the P. T. A., and sources other than the local school system. Other devices (posters, phonograph records, exhibits, charts, and aquariums) were supplied by the outside agencies in about one case in four. This fact seems to link up with the implication of the previous paragraph—that the administration falls into ruts when it comes to supplying schools with teaching aids and that non-official sources must be used to break down traditional practises.

(5) Pupils obtain or make posters as aids to teaching according to 51 percent of the principals. Also, in more than one-third of the schools the pupils make or obtain exhibits, charts, and pictures. Types of devices which might be obtained or made by pupils in greater numbers than reported include slides, maps, school museums, and aquariums.

(6) The public library, the local museum, and the school department are the chief sources of devices for most schools. Pictures, charts, and slides (in this order) are the devices most frequently borrowed by schools. Relatively few devices were reported as borrowed from business or industry.

(7) About 60 percent of the principals depend upon professional bulletins and leaflets to keep them informed as to developments in the field of aids to teaching. About one-third of the principals expect the teacher to help himself—in many instances probably with the principal's guidance. About 4 percent of the principals made no special effort to keep their schools abreast of the new developments. Does this link up with the fact that a number of principals had no special interest in devices?

(8) A majority of principals reported that their course of study gave some attention to the aids to teaching which should accompany the content. Seven percent of the courses were reported as not really dealing with devices. Is there a hiatus here which might be taken up if more principals developed a special interest in devices?

The present study has tried to isolate certain specific devices and to focus attention upon particulars. To some this will seem to be giving attention to the mechanics, " tricks," and routine aspects of teaching. This point is developed elsewhere in the yearbook. It is enough to say here that no skilled workman ever made a mistake in providing himself with selected, sharpened, and sufficient tools.

IN SELECTING MATERIALS, one should bear in mind the particular type or types of contribution each item is qualified to make to geographic training. Pictures and actual landscapes contribute chiefly by giving concrete concepts of observable cultural and natural features that are elements in geographic thinking. Maps contribute chiefly by giving ideas of location, distance, direction, elevation, slope, size, and distributions of cultural and natural features. Graphs and statistics contribute chiefly ideas of quantitative comparisons relating to cultural and natural items. Reading matter contributes in some measure in all the aforementioned ways, and may have high utility as a tool for directing the use of the materials presented. It is valuable as a check on information gained from other sources; it supplements information acquired elsewhere; and it aids in unifying, summarizing, and fixing groups of impressions gained by various means.—Edith Putnam Parker, " Investigating Miscellaneous Aspects of the Teaching of Geography," *Thirty-second Yearbook,* National Society for the Study of Education, Public School Publishing Co., 1933, p. 162.

SUPPLYING AIDS IN CITY SCHOOL SYSTEMS[1]

AN INQUIRY FORM on aids to teaching was sent in September 1933 to the 320 superintendents of schools in cities over 30,000 in population. One hundred and ninety-six or 61 percent returned the blanks with the data requested.

The purpose of the inquiry was to determine whether or not those in administrative authority in school systems were making systematic efforts to encourage the use of aids to teaching. If so, what agencies in the school system supply these aids? What sum is expended annually to support the agency or agencies? Which aids appear to be used most frequently and with greatest effectiveness? What do superintendents think principals should do further to enrich the curriculum thru aids and devices?

THE ANALYSIS OF THE DATA

The replies of the superintendents to the inquiry will be summarized briefly under each question.

What agency or agencies are organized as a part of the school system for the purpose of supplying teachers with visual and auditory aids to teaching?—In other words, do superintendents[2] believe that various aids are so valuable that a distributing agency in the schools is necessary? How far have the city school systems advanced in establishing departments of visual instruction? Which agencies within the system can be used to supply teachers with devices? Data bearing on all of these questions are shown in Table 1.

Points shown in Table 1 include the following:

(1) Almost 30 percent of those replying to the inquiry reported that they had departments of visual education, and one-third reported central school libraries.

(2) Visual education departments were reported most frequently in the cities over 100,000 in population. The central school library dominated in cities of less than 100,000 population.

(3) School system museums were reported by about one in five of those school systems in cities over 100,000 returning the inquiry form. This form of organization was relatively unimportant in cities under 100,000 in population.

(4) A decentralized plan (usually meaning a room or library in each school) was reported on 11 percent of the blanks returned. If this item had appeared in the checklist on the inquiry form no doubt some of those reporting "none" would have checked this item.

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[1] Prepared for the Editorial Committee by the Research Division of the National Education Association.

[2] Some of the blanks were filled out by assistant superintendents, directors of research, and supervisors—evidently at the superintendent's request.

(5) Twelve percent of the replies reported a heterogeneous array of bureaus and committees as supplying aids to teachers. Doubtless some of these will eventually develop into centralized departments of visual instruction or similar permanent agencies.

TABLE 1—AGENCIES ORGANIZED AS A REGULAR PART OF CITY SCHOOL SYSTEMS TO SUPPLY AIDS TO TEACHING

Agency	65 Cities over 100,000 in population		70 Cities 50,000-100,000 in population		61 Cities 30,000-50,000 in population		Total group 196 cities	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Department of visual education	23	35	19	27	13	21	55	28
Central school library	18	28	25	36	21	34	64	33
School system museum	11	17	3	4	2	3	16	8
Decentralized organization in each school	6	9	8	11	7	11	21	11
Miscellaneous bureaus, committees, etc.	11	17	7	10	6	10	24	12
None	20	31	33	47	29	48	82	42

Read table: Twenty-three of the sixty-five cities over 100,000 in population reported departments of visual education. This number is 35 percent of the sixty-five cities. Percents are calculated on the basis of the number of replies rather than the totals to columns 2, 4, 6, and 8 because several cities reported more than one type of agency.

How many employees are required to administer the agencies reported?—Superintendents were asked to indicate the number of each type of employee required to manage the agencies reported in Table 1. As shown in Table 2 data were supplied on both full-time and part-time employees.

Points of interest shown in Table 2 are as follows:

(1) The agencies in the largest cities (those over 100,000 population) have technicians and mechanics not found in the smaller cities.

(2) Most of the employees in the cities over 100,000 devote their full time to the work, while in the smaller cities the various workers give only part time to the administration of visual and auditory aids.

(3) On the average the agencies reported do not employ a large personnel: cities over 100,000 population, about six employees; cities 50,000-100,000 population, about two employees; and cities 30,000-50,000 population, about two employees. These averages include both full-time and part-time workers.

What sum of money is included in the annual budget to pay current expenses of the agencies?—An attempt was made to ascertain the approximate current annual cost of the agencies supplying teachers with visual and auditory aids. Apparently the question is not a simple one for superintendents to answer.

Of the cities over 100,000 in population only twenty-seven out of sixty-five gave estimates of current costs. These estimates ranged

TABLE 2—NUMBER AND TYPE OF EMPLOYEES IN AGENCIES SUPPLYING AIDS TO CITY SCHOOL TEACHERS

Type of Position	45 Cities over 100,000 in population with agencies[a]		37 Cities 50,000-100,000 in population with agencies		32 Cities 30,000-50,000 in population with agencies		Total group 114 cities with agencies	
	Number FT[b]	Number PT[c]	Number FT	Number PT	Number FT	Number PT	Number FT	Number PT
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Director	28	7	10	11	7	10	45	28
Clerk	70	8	5	14	2	9	77	31
Stenographer	15	8	2	11	1	4	18	23
Chauffeur	14	6	..	13	1	11	15	30
Technician	17	..	..	..	..	..	17	..
Mechanic	7	..	..	..	..	..	7	..
Librarian	1	..	3	7	15	1	19	8
Miscellaneous	87	..	1	..	4	..	92	..
Total	239	29	21	56	30	35	290	120
Average	5.3	.6	.6	1.5	.9	1.1	2.5	1.0

Read table: In the sixty-five cities over 100,000 in population there are twenty-eight full-time and seven part-time directors of agencies supplying teaching aids.

[a] The total number of cities with agencies is obtained by subtracting the number reporting "none" in Table 1 from the total number of replies.

[b] FT, full-time.

[c] PT, part-time.

from less than $1000 to more than $20,000, with a median at approximately $7500.

In the group of cities of 50,000 to 100,000 population only twenty out of seventy attempted estimates. These figures ranged from less than $1000 to $15,000 with a median at $2500.

In the cities of 30,000 to 50,000 population only fourteen out of sixty-one cities attempted to give estimates as to current annual expenditures. The range of these estimates was from less than $1000 to $10,000 with a median at about $2500.

The above figures are from scattered communities and are probably estimates in most cases. Apparently the agencies reported in Table 1 are more clearly evolved administratively than they are financially. Superintendents seemed uncertain as to where a line might be drawn in the records of actual costs. For these reasons the ranges and medians are probably only generally indicative of actual conditions.

What aids to teaching are most frequently supplied by the agencies?—In other words, what aids or devices are the teachers most likely to ask for? What devices do actual experiences seem to indicate are most useful? Data on these questions are shown to some extent by the summary in Table 3.

TABLE 3—AIDS AND DEVICES MOST FREQUENTLY PROVIDED TO TEACHERS BY THE SCHOOL SYSTEM AGENCIES

Aids and Devices	44 Cities over 100,000 in population with agencies[a]		35 Cities 50,000-100,000 in population with agencies		31 Cities 30,000-50,000 in population with agencies		Total group 110 cities with agencies[b]	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Books	26	59	30	86	27	87	83	75
Charts	27	61	14	40	19	61	60	55
Exhibits	24	55	16	46	15	48	55	50
Globes	18	41	19	54	14	45	51	46
Lantern slides	39	89	32	91	27	87	98	89
Maps	18	41	21	60	21	68	60	55
Museum collections	21	48	8	23	7	23	36	33
Pictures	29	66	31	89	27	87	87	79
Phonograph records	15	34	21	60	18	58	54	49
Posters	17	39	14	40	19	61	50	45
Silent movies	37	84	23	66	18	58	78	71
Sound movies	3	7	4	11	2	6	9	8
Radio	7	16	12	34	14	45	33	30
Still films	6	14	3	9	2	6	11	10
Stereographs	5	11	3	9	...	...	8	7
Miscellaneous	6	14	1	3	4	13	11	10

Read table: Of the forty-four superintendents of cities over 100,000 population who answered the question, thirty-nine or 89 percent reported lantern slides as the device or aid to teaching most frequently supplied to teachers by school system agencies. Percents are figured on the basis of the number of superintendents answering the specific question.

[a] The number of cities in each size group answering this question.

[b] While 114 cities reported agencies which supplied devices, only 110 indicated the kinds of aids most frequently distributed.

Points of particular interest in Table 3 are as follows:

(1) In cities over 100,000 in population the devices reported most frequently in order of mention were: lantern slides, silent movies, pictures, charts, books, and exhibits.

(2) In the second group of cities (50,000-100,000) the devices reported most frequently were: lantern slides, pictures, books, silent movies, maps, and phonograph records.

(3) In the smaller cities the aids to teaching reported most frequently were: lantern slides, books, pictures, maps, charts, and posters.

(4) Apparently the lantern slide is the outstanding device for distribution by the centralized agencies of the school systems. Next, but somewhat less frequently mentioned, are pictures, books, and silent movies. Other devices mentioned by more than 50 percent of the entire group of cities include: maps, charts, and exhibits.

(5) Radio sets appear with greater frequency in the smaller cities. This condition probably means that in the cities over 100,000 in population each school has its own set, while in the smaller cities instruments are sent out from the central agency as needed.

What aids or devices are most valuable and effective?—Superintendents were asked to list the six aids or devices which they believed to be most useful in their school systems. It was thought that this

might give a clue to devices which, tho mentioned less frequently in Table 4, were used with special skill in certain cities. The summary to this question is given in Table 4.

TABLE 4—AIDS OR DEVICES REPORTED AS MOST VALUABLE AND EFFECTIVE IN CITY SCHOOL SYSTEMS

Aids and Devices	53 Cities over 100,000 in population[a]		56 Cities 50,000-100,000 in population		48 Cities 30,000-50,000 in population		Total group 157 cities	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Books	29	55	40	71	33	69	102	65
Bulletins, leaflets, and printed materials	4	8	1	2	5	10	10	6
Charts	23	43	20	36	18	38	61	39
Excursions	9	17	2	4	2	4	13	8
Exhibits	20	38	20	36	18	38	58	37
Globes	17	32	21	38	10	21	48	31
Graphs	1	2	..	..	..	..	1	.6
Lantern slides	44	83	44	79	33	69	121	77
Library	3	6	2	4	4	8	9	6
Maps	29	55	40	71	36	75	105	67
Museum collections	21	40	13	23	2	4	36	23
Pictures	35	66	41	73	32	67	108	69
Phonograph records	15	28	25	45	15	31	55	35
Posters and cartoons	8	15	13	23	13	27	34	22
Radio	10	19	18	32	17	35	45	29
Silent movies	34	64	29	52	21	44	84	54
Sound movies	5	9	4	7	..	..	9	6
Sterographs	9	17	2	4	1	2	12	8
Still films	9	17	5	9	3	6	17	11
Miscellaneous	14	26	3	5	8	17	25	16

Read table: Twenty-nine or 55 percent of the fifty-three superintendents in the largest cities who answered the question included books as among the six most valuable devices used in their school systems. Percents are figured on the basis of the number of superintendents answering the specific question.

[a] The number of cities in each size group answering this question.

Of interest in connection with Table 4 are the following points:

(1) In the cities over 100,000 in population the devices mentioned most frequently as effective and valuable are the following: lantern slides, pictures, silent movies, books, and maps.

(2) In the cities of 50,000 to 100,000 in population the devices mentioned most frequently are as follows: lantern slides, pictures, books, maps, and silent movies.

(3) In the smaller cities the aids to teaching listed more frequently are the following: maps, books, lantern slides, and pictures.

(4) For the entire group of cities the order in which the devices were reported as most useful was as follows: lantern slides, pictures, maps, books, and silent movies.

There is more than a casual interest in comparing the results of Tables 3 and 4. In the first of these tables we have listed the devices most frequently furnished to teachers and in Table 4 the devices

believed by superintendents to be most effectively used. On the whole, then, the superintendents believe that the devices (lantern slides and pictures) most frequently supplied to teachers by the central agencies are those most effectively used. Books and silent movies are believed to be supplied somewhat in excess of their effective use. Maps apparently are believed to be rather valuable. Charts and exhibits are believed to be supplied in proportion to their effectiveness.

What can elementary-school principals do to enrich instruction thru the use of many devices?—Superintendents were asked to write on the inquiry blank specific suggestions as to how principals might improve instruction thru the use of devices. Only 103 of the 196 blanks contained any suggestions. After these comments were classified under general headings they were summarized as shown in Table 5.

TABLE 5—SUGGESTIONS BY SUPERINTENDENTS OF WAY IN WHICH PRINCIPALS CAN IMPROVE INSTRUCTION THRU AIDS TO TEACHING

Suggestions	35 Cities over 100,000 in population[a]		33 Cities 50,000-100,000 in population		35 Cities 30,000-50,000 in population		Total group 103 cities	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Encourage pupil activity in making and using devices	..	..	5	15	3	9	8	8
Inspire and encourage teachers to use aids in their teaching	17	49	17	52	9	26	43	42
Organize within the building so that teachers will be able to use the available aids with maximum effectiveness	16	46	6	18	9	26	31	30
Keep informed as to available devices and best methods	12	34	3	9	4	11	19	18
Purchase or otherwise acquire aids for the teachers to use	4	11	13	39	13	37	30	29
Supervise the use of aids	3	9	5	15	9	26	17	17
Thru meetings and conferences help teachers understand how to use aids	7	20	..	..	2	6	9	9

Read table: Seventeen superintendents or 49 percent of those answering the question for the largest cities thought that principals should do more to encourage teachers to use aids and devices in their teaching. Percents are figured on the basis of the number of superintendents answering the specific question.

[a] The number of cities in each size group answering this question.

Points of interest in Table 5 are as follows:

(1) It is rather amazing that only a little over half of the superintendents who returned the inquiry form had specific suggestions to make to principals.

(2) Superintendents in the cities over 100,000 in population urged principals (a) to inspire and to encourage teachers, (b) to organize the administrative machinery within each school to insure effective use of devices, and (c) to keep informed as to available aids.

(3) Superintendents in the largest cities placed the inspiration and encouragement of the teachers first, but followed second with the suggestion that principals should "purchase or otherwise acquire aids for teachers to use."

(4) It is a point for interesting speculation that the possibility of the pupils making devices was suggested only by cities under 100,000 in population.

SUMMARY AND CONCLUSIONS

An inquiry on the management and the use of teaching devices was sent to about three hundred cities over 30,000 in population. About 61 percent returned the blanks with the questions partially or wholly answered.

It appears from these replies that centralized agencies have been established in about two-thirds of the city school systems for the administration of various aids to teaching. These agencies most frequently established in order of preference are: (1) department of visual education, (2) central school library, and (3) school system museum.

On the basis of the replies these agencies average about $7500 annually for current expenses in the cities over 100,000 in population, and they cost on the average about $2500 per year in the cities between 100,000 and 30,000 population. These figures are acceptable only as general estimates.

In the largest cities about six persons give all or part of their time to the centralized agencies engaged in administering the aids to teaching. In the cities under 100,000 in population about two employees on the average are required.

Lantern slides and pictures are the aids most frequently supplied by the central agencies and also those considered most valuable by superintendents.

As next steps for the enrichment of instruction thru devices superintendents urge principals (1) to inspire and to encourage teachers to use more devices, (2) to organize within each school for the effective use of aids, and (3) to acquire more devices for teachers to use.

GETTING THE FACULTY MACHINE MINDED

FLOYD G. HOEK
Principal, Longfellow School, Teaneck, New Jersey

THE FACULTY of a school is usually perturbed when faced with the problem of using mechanical equipment for increasing the efficiency of its teaching aids. Average teachers are not mechanically minded and one cannot expect those so constituted to take the initiative in mastering the intricacies of labor-saving machines.

The knowledge of the service that these machines can give does not encourage the daily use of them by the majority of teachers. How can the principal get his faculty to approach these "monsters" and to make them servants? The faculty usually hopes to have the machines operated by someone other than themselves. Of course there are those who never wish to tackle anything entailing any effort or extra work. It is not the writer's purpose to discuss that phase of the problem, but rather, to discuss how to guide the "open-minded" members of the staff in the task of learning the fundamentals of operating labor-saving machines.

Teaching the use of the mimeograph—The mimeograph requires no apology for its appearance on the "preferred list" of mechanical aids. Before its use in the schools it had increased the administrative efficiency of the industrial world. So its use in the schools is a matter of applying business methods to increase our "producing power." The mimeograph has innumerable uses: the printing of tests, seatwork, pictures, teaching forms, and the school paper. For the latter purpose alone it would be worth its initial expense. It is indispensable for printing assignments developed by the teacher who is desirous of teaching thru individual methods. The usefulness of the typewriter as a supplementary aid to the mimeograph merits its inclusion here. The speedograph and duplicator are also of value.

The first step, in my estimation, in getting the faculty to use duplicating equipment, is to do the work for them and create the helpful attitude so necessary in launching the project. Of course, this presupposes on the part of the principal or the one assisting him in the work, a knowledge of not only the pedagogical value of the equipment but, equally important, proficiency in its operation and manipulation. Many teachers who would use duplicators are surprised at the results achieved and the speed of production. There comes a realization that here is something that would be of inestimable value in the classroom. Soon, those with initiative and ambition will ask how to

do this work themselves. It is here that the first opportunity is afforded to start them on the road of self-help.

In the writer's experience it is important not to attempt to help more than one teacher at a time and by all means not to teach everything about the machine in one lesson. Too many times teachers have been discouraged by the number of intricacies of the equipment whereas there are but few fundamental things to know about the handling of any duplicating machinery. At first there appears to the novice that there is a great deal to learn and to do because of the gadgets which appear and disappear. The instructor should carefully explain intricacies, a few at a time. Furthermore most of the work should at first be done by him, the teacher looking on and assisting only in little things. In all cases the instructor, tho he does not need to be an expert, must have sufficient knowledge so that the problems which arise can be answered and the necessary mechanical adjustments made to carry on the work.

Secure the confidence of the teacher by actually being present and doing as much as the ability of the pupil requires. Let the teacher see that you are only too glad to help and are interested in having him master the operation of the machine. To do this requires considerable time on the instructor's part, but he is well repaid when eventually the faculty utilizes the equipment in doing a creditable piece of work.

When a teacher has become proficient, he can be asked to instruct others. Some teachers are more at ease if a fellow-worker does the teaching without the principal present to supervise the procedure. When insurmountable difficulties are encountered the principal should go cheerfully to the teachers' aid and make light of their mistakes. Encouragement is important at this point, and the teachers react just as the children in their classes. It should be emphatically repeated, however, that the individual, learning to use a duplicating machine, be taught only the fundamentals, as the more technical part can be acquired later. In all probability the average teacher may never need it—so why burden him and make the learning more complicated?

When the individual has acquired the general principles and seems to be well on the road of self-help, by all means let him alone to work it out for himself. Suppose he does make a mistake and does spoil some work. Who has not spoiled some material when beginning in a new field? Once the teacher has been shown how to manipulate the duplicator, doing the work for him will serve only to deaden his interest and to lengthen the period of dependence on others. Let him run into difficulties. Experience is often the best teacher. Necessity is not only " the mother of invention "—it brings about the personal

experiences that result ultimately in the acquisition of a proficiency in the use of tools. Let the person see the results of his own work and he will be aware of the need for further knowledge in the mastery of these desirable tools.

Teaching the use of motion picture equipment—Sometime ago we purchased a motion picture projector for our school. When the matter of its use was brought before a faculty meeting, the general opinion of the teachers was that they would be most happy to have the principal operate the machine for them. Many were relieved when they were assured that assistance was to be given them. No more was said until the machine arrived and was put into use. Then "good old inquisitiveness" came to the rescue. Inquiries came as to why the teachers could not learn to operate the projector. This interest was what was needed. Before long some volunteered to undergo the necessary training and the instructor was ready to begin his work.

The first things to do are to get the projector in good running order and to show the teacher how to start and to stop it. It is to be expected that the novice will not at first learn all that is required, but he will get the essential ideas. At this point the writer deliberately leaves the room—thus trying to create a feeling of "do or die." This apparent "brutality" is absolutely necessary, as one must develop self-reliance in those who are to operate equipment independently. After this step, each teacher should be taught individually as one hesitates to let a co-worker see his seeming stupidity. After having assisted in the various steps of preparing the film, adjusting the speed, and fixing the focus, it is well to allow the teacher to go thru the procedure without further suggestions. When a mistake occurs, show why it happened. Do not expect to have him tell what caused the difficulty for if the learner really knew he would not have permitted it to happen in the first place. Analyze the situation in a manner that avoids offended feelings. Later have the teacher take the projector to the classroom in order to give him the opportunity of "doing" alone without the close scrutiny of the principal. The main point here is to encourage confidence in its use rather than uncertainty thru fear of making mistakes.

Teaching the use of the stereopticon—The use of the stereopticon is not as difficult to learn as the motion picture projector. Yet this machine is one of the greatest helps in classroom instruction. Any teacher can be taught to insert the plug in the electrical outlet, to put the slides correctly into the machine, and then to focus the lenses.

After some practise in setting up the projector and inserting slides into the frame the instructor should allow the "beginner" to experi-

ment alone. Again the writer repeats, give the teachers experience, or else they never acquire confidence and independence.

An easy way to get the faculty to use this apparently " formidable " machine is to give a class demonstration with slides chosen by the teachers. The principal should do only the mechanical work and not the teaching. Why? Almost every teacher dislikes to be known as helpless, especially in the eyes of his principal or the other teachers. After the demonstration, the teacher will usually ask how to do the projecting as well as the lecturing and teaching. He prefers to be alone and, with knowledge of how to manipulate the machine, will feel less self-conscious about the teaching.

Often a teacher will train a pupil to operate the stereopticon. This skill can be acquired by children of the first grade. By making the manipulation of the projector a series of routine steps these little helpers can do them well. Since this is true, it is obvious that the average teacher, with a desire to progress in his work, can learn with ease how to use the stereopticon in the classroom.

Conclusion—The excellent libraries of films and slides made by various agencies for educational purposes are of inestimable value to a teaching program. Without a working knowledge of the machines requisite to the use of these aids in teaching, there is no value in knowing that these things exist. Without a complete knowledge of the use of visual equipment, such aids cannot be made a part of curriculum experiences. It is only with these machines that we are able to have a program which encourages the child to desire more knowledge and to seek the real thing that has been pictured before his eyes. After all, " seeing is believing."

Every possible means should be used to encourage the faculty to become machine minded. Only then will they realize the vast resources that are at their disposal. These materials, in many instances, are so well organized that little effort is needed for presentation by the teacher. The teachers " must be shown," and rightly so. It takes definite organization and ability on the part of the principal to help others with mechanical phases of teaching technic.

Are we, in the teaching field, ready to admit that we are growing too old to see the light of new educational standards and new teaching technics? It is self-evident that progress is realized only thru those individuals who, eager for the acquisition of better tools, appraise each new device, and, finding one of value, take the initiative to use it in the schools.

MAKING AIDS AVAILABLE WITHIN THE SCHOOL

ELLA GROSS
Principal, Public School 133, Brooklyn, New York

HOW MANY PRINCIPALS have heard teachers complain that visual and other aids are not readily available even in well-equipped schools? A typical conversation among teachers goes something as follows:

"Of course we believe in aids to teaching and we should like to use them regularly, but . . . . ."
"But it's such a nuisance to get the material."
"Yes, and then to return it to the supply room."
"If you want to use slides it is so difficult to set up the projector."
"Yes—and so difficult to fit the use of aids into your classroom plans."

Such objections must be faced by every principal who believes that the use of visual and auditory aids enriches instruction. No matter how many aids are available they tend to collect dust unless the teachers can use them effectively and conveniently.

In attacking this problem of internal management within our school the principal's office has assumed full responsibility. We have undertaken to deliver to every classroom the materials and equipment appropriate for the instruction of each week.

Preparing card indexes—Our first problem was to select for every grade the set of slides or films which conformed with the term plan of the week. In our term plans, each subject is arranged by weeks. It was a laborious but relatively simple matter to combine each subject by weeks for all grades on cards (Set A), as follows:

(1) For the first week of nature study
First grade—Seasonal changes
Second grade—Seasonal changes
Third grade—Seasonal changes
Fourth grade—Seasonal changes
Fifth grade—Household insects
Sixth grade—Seasonal changes—eclipse, equinox, etc.
(2) For the first week in geography
4A—Milk, cows, how we live
4B—Poles, Equator, Eskimos, Congo
5A—Gulf of Mexico, Atlantic and Pacific
5B—South central states and industries
6A—Canada, Labrador, Newfoundland
6B—Europe, general.
(3) For the first week in history
4A—Hudson River, Hendrik Hudson
4B—Norsemen, Viking ships
5A—Columbus, Indians, explorers
5B—Explorers and discoverers
6A—Original thirteen states
6B—Life in the South—plantations, customs, etc.

Consulting the museum catalog we made another set of cards (Set B) for each subject. Each card represents one group of slides and looks like this:

Nature
The seasons—fourth grade
American Museum of Natural History

The various catalogs were dealt with in similar fashion, and as additions are made to the catalogs new cards are made out and filed. Sets A and B were now combined, obtaining the following result:

Card A under "Nature" is followed by three cards, listing:
Fourth grade—The seasons
Fifth grade—Harmful household insects
Sixth grade—The moon and its eclipses.
Card A under "Geography" is followed by six cards, listing:
4A—Milk from farm to home
4B—Strange shelters of strange people
5A—Atlantic seaboard
5B—Cotton plantations to mill
6A—Across Canada by C.P.R.R.
6B—Countries of Europe—map study.
Card A under "History" is followed by four cards, listing:
4A—New York Harbor—Hudson River
4B—Lief Ericson
5A—Voyage of Columbus
5B—Life on southern plantations—Old South.

Preparing the school program—With our needs carefully cataloged we are ready to prepare the complete school program in visual aids for the entire term. This schedule is posted on every floor of the building for ready reference by the teacher, who then knows the exact nature of the material that will be sent to him and the exact time of delivery. He can prepare the class work accordingly. Moreover, the material is always in the building at least one day before it is to be used, and the teachers have opportunities for previews.

The requisition for aids to be obtained from the central museum is prepared in advance for an entire term, and is sent at least two months before the new term begins. In this way the materials are reserved for the time when they are needed.

Another phase of this second problem is that of arranging for a definite time at which each class is to use one of the projectors. We make out the time schedule similar to the one illustrated below. In

each teacher's time schedule the period entitled " visual instruction " coincides with the school schedule. It is then a simple routine to deliver the visual aid material to the various classes, and also to trace anything not returned on time.

VISUAL INSTRUCTION SCHEDULE

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:00	2A-2	2B-2	....	1A-3	3B-2
9:30	....	2B-3	....	1B-3	....
10:00	5B-2	....	....	....	3B-3
10:30	....	6B-3	....	1A-x	....
11:00	4A-3	6A-2	....	Kg-1	3A-3
11:30	....	6B-2	....	....	....
1:00	5A-3	4A-2	....	Kg-2	....
1:30	....	4B-3	....	1B-x	2A-3
2:00	5A-2	6A-3	....	3A-2	....
2:30	5B-3	4B-2	....	....	....

Distributing aids and equipment—Our third problem is that of preparing the visual aid material for delivery to the classes and for return to the museum. When the material arrives at the school (the schedule above shows no program on Wednesday because that is the day of delivery) it is checked with the requisition, and a card is prepared for each set. On this card the classes are listed in the order in which they are to receive the set, with the time for delivery in each room, as follows:

Baby Birds at Home

Friday —2A-3—1:30
Monday—2A-2—9:00
Tuesday—2B-2—9:00
Tuesday—2B-3—9:30

Two boys belonging to the monitorial staff are assigned to deliver the materials to the classrooms. They are supplied with card copies of the school schedule of visual instruction. They find all of the material in one closet in the office. The cards on each set identify it. The boys select the set for the grade listed on the schedule and deliver the machine with it. They also call for aids at the end of the period and deliver them to the next class.

As each teacher returns a set of aids he initials the card schedule. The last class to use the set each day returns it to the office where it is looked over and prepared for further deliveries.

Conclusion—We have found the above routine easily enough established and maintained. Two months before the end of each term we look over the teacher's criticisms of the various aids so as to eliminate some, to re-order others, and to substitute new materials. In this way we cooperate with both the museum and the teacher. The museum gets one complete order from the school, and the teacher has no trouble getting his material or returning it to the museum; he always gets the projector with the material; and he always (well, almost always) gets material that fits in with his term plan.

THE APPEAL OF THE EYE may be stressed in teaching in utilizing all of the resources of the average classroom equipment with little or no expense. The blackboard is for the use of teacher and pupils and not for ornamentation. It should be used to illustrate the subjectmatter of the grade so far as this is possible. Greater use should be made of the modern map, as it contains a wealth of information. Here may be found the location of places, transportation routes, topography, climatic influences, distances, and resources that contribute to man's necessities. Much more may be learned from the map than is ordinarily taught. More should be made of the picture illustrations that abound so freely in the modern textbook. Here is a fruitful field of work where the surface has hardly been scratched.—Balcom, A. G., *N. E. A. Proceedings*, 1925, p. 302.

THE SERVICES OF A CENTRAL DEPARTMENT

W. M. GREGORY
Director, Educational Museum, Public Schools, Cleveland, Ohio

PRINTING, rapid communication, cheap travel, and photography in still and motion pictures have revolutionized all phases of social life. These powerful aids to learning have been responsible for the rapid world progress of recent times, and should be freely utilized in the schools. School is something more than a book. In the old days of the little red schoolhouse there was a book and a rod which were used for a few months each year. Then, most of the real ideas in life were gained by long hours of labor in the field or in the home. Today pupils do not have these opportunities to obtain clear ideas of labor and living, as there is no work for them in either field or home. Modern specialized industry calls for special training and provides no place for youth to obtain the ideas of life so essential to human welfare. Hence, school training should be based upon the actualities of life and should provide learning tools which impart life experiences with speed and accuracy. Interest in the worthwhile things of life should be early given to children thru the medium of modern learning tools under the guidance of the teacher skilled in the technic of using aids to shorten and clarify the learning process.

The value of modern learning tools—It is true that the first "magic lantern" was a novelty of small value in the work of the school. Likewise, the first motion pictures were entertaining and not instructive. The educational value of the learning aids has been the object of scientific research and the gist of the findings is that the learning process is stimulated, speeded up, made more accurate, and lessened in cost.[1]

The results of research have shown that the image is a powerful instrument of instruction for the young. It is well, therefore, that learning aids help in the speedy and accurate acquisition of useful knowledge and that the laborious technic of lesson preparation and presentation be replaced by opportunities to train the child's power of imagery of the things needful in his experience.

Factors which determine the success or the failure of learning aids—Some of the fundamental factors which determine the value of the learning aids are:

(1) *Correct technic*—The aids are useful in the learning process only when used with the correct technic by the teacher. A review of the courses of visual instruction as given in teacher-training institutions reveals that they do not give

[1] See Chapter X of this yearbook for reviews of important research studies.

enough of the classroom technic to enable the teacher to make effective use of the most important tools.

(2) *Wise selection*—Learning aids cannot be successful if placed in a school system under a "hit-and-miss" plan. To be successful they must be carefully evaluated thru classroom experiments of expert teachers and technicians. It should be a basic principle that the purchase of any aid to learning is made because it is an essential tool to aid the pupil in learning with speed and economy.

(3) *Purposeful organization*—The lack of definite and purposeful organization of aids means a failure to obtain their benefit. Schools can easily accumulate piles of specimens, colored pictures, expensive apparatus, motion picture machines and stuffed animals, all of which is so much junk unless each has its distinct use in the activity of the schoolroom. School executives should insist that the educational value of learning aids be determined before their purchase, and that as part of the school equipment they have a definite place in the curriculum. Thus, some definite procedure should be established in a school system for checking the value of all materials to be purchased.

(4) *Educational value*—The educational value of aids is somewhat different from that of textbooks or supplies. Generally, the learning aids give the curriculum its vital sparks of interest. In the elementary school, learning to read is difficult and the book is frequently boresome. A live specimen, however, or a picture, or an object has a stimulating appeal to the imagination and immediately attracts and interests.

Economy of a central bureau for the educational organization and distribution of learning material—The necessary work of collecting, organizing, and distributing learning tools of high standard is far beyond the reach of a single school, not to mention the individual teacher. When teachers are under the necessity of obtaining objective material for their own classes they frequently accept for their use miscellaneous advertising materials which are more a menace than a help. Recently the authorities of a large city made a careful survey of such materials and concluded that schools were not benefited. Consequently, they have refused admission of such materials.

The problem of vital aids to learning is not easily solved, for there have been but very few studies as to how the different types of learning aids meet the average classroom conditions. Sometimes excellent tools of instruction are ineffective as they are not used at the grade level for which they are best adapted. For example, complex motion pictures in the lower primary grades are not as effective learning tools as the simple still picture. All aids to learning should receive very careful consideration before their citywide use. Some school systems regard a hasty purchase of any type of material to aid learning as an educational risk.

Many large cities, as well as small ones, have central bureaus for the purpose of collecting and adjusting learning materials to the course of study and the classroom. The educational museum of Saint Louis is one such institution in the United States. Detroit, Chicago, Pittsburgh, Buffalo, and Cleveland also have definite organizations

for providing the learning materials of a high standard for classroom use. Some of these organizations do no more than buy and distribute the materials. Some depend upon local museums for their materials. Other cities have departments of films which are frequently on a forced circuit, with results not conducive to educational growth. Other organizations buy, test, and adjust the various aids to learning for use in the schoolroom. Some of the city organizations, due to local customs, have their materials divided between different departments or outside agencies, which is a loss in efficiency and an increase in cost. In Cleveland the low cost of this service is obtained by the educational museum which serves as a central clearing department which purchases, supplies, repairs, organizes, and distributes all materials for classroom use.

The function of the educational museum in Cleveland—The learning aids are organized and distributed to the public schools by the educational museum, which was founded in 1909, as a part of the school of education. It is now a separate department of the public school system. It is well to call attention to the basic reason for the organization of the educational museum in Cleveland:

> The term educational museum is seemingly somewhat ambiguous as any museum has more or less educational value. The additional emphasis on that value in this title is intended to define more clearly its field of activity. This museum undertakes to supply pupils and teachers with illustrative materials which are carefully selected and organized as an effective aid to actual school work.

The educational museum of Cleveland organizes and supplies on demand the essential learning aids for classroom use. It is the clearing-house for all types of materials that are to be used in the public schools. Its growth has been consistent with the gradual improvement in the technic of using learning aids and the modern organization of the curriculum that requires that these essential tools be used.

The preparation of learning aids by the educational museum—Our educational museum has four objectives in the preparation of aids to learning: (1) to supply at low cost the essential aids to the classes at work; (2) to meet the objective requirements of each course of study; (3) to obtain the type of material best suited to attain the desired results; and (4) to organize material to be used at the different grade levels of learning.

These important objectives guide the activities of the educational museum in the collection, preparation, and organization of the lesson aids. Courses of study are carefully analyzed to ascertain the learning aids necessary in the units to be taught. Only those are chosen which are of greatest value to pupils. The type selected depends

upon the subject, pupil, grade, and cost. The technic of preparing aids to learning is based entirely on the objectives named above. The use of the learning aids by the pupil is the final criterion that determines the type of material and its organization. Sometimes a very inexpensive and simple aid is the most effective in the classroom; whereas, frequently the very expensive apparatus or exhibit is out of place, soon deteriorates, or becomes more or less an educational novelty.

In the following paragraphs some of the above principles followed by the educational museum are presented in detail as they relate to pictures, specimens, lantern slides, and motion pictures.

(1) *The picture as a learning aid*—The picture is used with such a low efficiency in learning that it demands some careful consideration. Pictures are a fundamental force in creating accurate ideas and in arousing enthusiasm. Teachers should be more fully conscious of this power of pictures in aiding learning and realize that they are not an incidental but an essential core in the lesson to be taught.

In arranging pictures in units, each set should be definitely limited to a single subject; for example, " Iron Mining in the Lake Superior Highlands " is more effective as a tool than general pictures on " Iron Mining." Pictures should be selected for inclusion in a unit set only when they are dated, located, authoritative, and accurate as to facts.

After the picture is chosen for a unit set, it is made to the 8x10 inch size which classroom experiments have indicated is best suited to a small group. Each unit set has about twenty-five pictures, which number, experience has shown, furnishes suitable material for the average class for one week.

On the reverse of each picture there is placed the following study guide which is graded for the pupil's use: (1) study guide questions; (2) a game or puzzle (this is a test); (3) selected vocabulary; (4) information paragraph; and (5) check-up test.

The following is a sample illustration of the study guide that is printed on the reverse of the picture of Lauterbrunnen Valley from the unit set of the geography of Switzerland.

STUDY GUIDE FOR PUPIL [2]

(1) Questions on the Village of Lauterbrunnen, Switzerland.
  (a) For what is the land most used by these people?
  (b) Does the picture suggest how these people make a living?
  (c) What is growing on the slope nearest you?
  (d) What seems to be the most common crop of this region?

[2] Only 10 of the 19 study guide questions are given here for illustrative purposes. The check-up test is omitted in this section because it is not printed on the reverse of the picture.

(e) Why are the chalets in the field?
(f) For what are the chalets used?
(g) Find the small village or the cluster of hotels and pensions along the stream.
(h) Do any features suggest reasons for the location of this small village of Lauterbrunnen?
(i) Do you see any danger in the steep, high cliffs of bare rock?
(j) Is there any evidence of former avalanches from these steep cliffs?

(2) Swiss Puzzle. Match the parts of sentences.
(a) The valley of Lauterbrunnen.....
(b) Switzerland is a.....
(c) Dairying is carried on.....
(d) The mountainsides are.....
(e) There are small glaciers.....
(f) The chalets are built.....
(g) The Falls of Staubbach.....
(h) Switzerland lies in the.....
(1) in the Alps
(2) on the mountains in the distance
(3) north temperate zone
(4) is U shaped
(5) mountainous country
(6) add to the scenic beauty of Lauterbrunnen
(7) forest covered
(8) river valley
(9) of wood.

(3) Vocabulary Building.
(a) Find in the pictures the features listed below.
(b) Write sentences about your pictures using these words:

valley floor	trail
hanging valley	chalet
U shaped	Alpine hayfield
falls	snow-capped peaks
Alp	

(4) Information about Lauterbrunnen Valley, Switzerland.

The Swiss village of Lauterbrunnen is in the deep, steepsided, U shaped valley along the Lauterbrunnen stream. This glacial stream joining others forms the head waters of the Rhine River. The Staubbach Falls is formed as the water drops 980 feet from the Alp above to the valley floor. Its water turns into a misty spray as it falls and it appears as a delicate lacy curtain spread on the side of the dark valley wall. The contrast of the white snows, the bright blue sky, the green of the grassy Alps, and the deep valley are all combined in this small valley of the Lauterbrunnen. Snow-capped peaks, among which is the Jungfrau, are in the background high above the valley. The scenic beauty of this valley attracts many tourists who find in the village guides and lodgings. Dairying and tourists are sources of income to these Swiss people.

These study guides enable the pupil to do individual work while the teacher may supervise the activities of the different groups in the classroom. The study guides on the reverse side of the picture enable the teacher to use them to accomplish definite results. Such material when thus prepared is an influence in aiding instruction and when it

is distributed citywide thru a central organization like the educational museum, it sets the standards of learning in a school system.

On the reverse side of the mounted picture in the upper right corner, is the catalog code number which classifies the picture so that confusion is prevented. Each picture is mounted on grey tagboard, cut to 9x12 inches and the study guide printed on the reverse side. Grey tagboard is chosen for its strength and non-soiling qualities. Each picture is mounted by a wax adhesive sheet under heated electric press which prevents warping and curling. The completed set of pictures is enclosed in a heavy tagboard envelope which is used to save wrapping in the shipping room. Such picture study units are filed and ready on demand for citywide distribution. Duplicates of these units are easily prepared as the educational museum owns the original negatives. Such picture units are more widely used than any of the learning aids.

(2) *Lantern slide units*—The lantern slide has the advantage of placing before a class the enlarged picture so that it can be clearly seen, and thus focuses the interest and attention of the entire class. The lantern slide is invaluable in presenting pictorial material for geography, history, elementary science, and nature study. Besides the pictorial presentation, the lantern slide provides an economical substitute for charts, graphs, maps, and other graphic presentation.

For the Cleveland schools, the lantern slides are made into unit sets as required by the school curriculums. These unit sets contain about twenty-five slides. Each set of slides includes diagrams, maps, and sketches where these add to the ideas of the units. Such units are organized for the clearness with which they present the essential facts and their relationships.

After lantern slides have been selected for a unit they are placed in a small compact shipping case, properly indexed and accompanied by title sheet, which suggests definite class uses such as: pretesting, introducing new words, ideas for building initial concepts, opportunities for original first-hand observation, checking ideas by observation, exercises to develop skill and abilities, testing the results, and checking the facts. Some units of lantern slide sets are prepared in duplicate as required to meet the demands. This can be done at small cost as the educational museum owns the negatives.

When the requests for the lantern slide unit sets are high it has been found feasible to prepare special sets and loan them for an entire semester. The map set is an illustration of these sets prepared for a semester loan. It consists almost entirely of colored physical maps, with some black and white sketch maps. These lantern slide

maps have been carefully selected so that all the continents and the countries which are studied in elementary geography are represented. They remain the property of the educational museum and at the end of each semester are returned to the museum, where the slides are cleaned, broken ones replaced, and any changes required by the curriculum are easily made.

It is well to direct attention to some phases of the technic of slide selection and organization. A few slides of quality which are authoritative and attractive are superior to a mass of highly colored, out-of-date slides provided en masse for a system. Study guide slides which contain the directions or questions to be used by the class are made by typing the material upon cellophane and mounted in a slide, and when projected can be clearly seen by all members of a large class. Thus, each student can copy the material from the projected study guide slide for use with the following slide picture. Some sets have the study guide slides and pictures in alternate order. Some diagrams on the slides are incomplete and when projected on the blackboard are to be finished by the instructor to illustrate and emphasize the essential points. This type of slide has value in general science, both in instruction and in testing. Some map slides are made to aid the pupil in map construction by tracing a portion of the map which is projected on the blackboard or a large piece of paper. Thus, a series of history slides is easily prepared to show the gradual westward migration of people in this country. If these are traced on large sheets of paper by projection from the map slides a record of this movement is made as it is studied by the class.

The lantern slide requires a skilled technic in its preparation for use. It should be fitted to the classroom requirements and the course of study. The selection of the photographic pictures for a lantern slide unit involves the rejection of much material and the retention of that which will be useful. This demands the service of skilled classroom teachers, who know and are familiar with the pupils' needs. The slide must be free from photographic defects, properly mounted, matted with square corners, indexed, and boxed in units convenient for distribution.

The above results can be accomplished only by a trained staff of some central school organization. In Cleveland the organization of the lantern slides has been done entirely by the educational museum and the gradual increase in the class use of lantern slides has been the result. At present the educational museum supplies some 42,633 lantern slide units per year to the schools. Each school, on the average, uses 272 unit sets each year. It would be impossible to stock each school with these slides because of the cost and the labor neces-

sary in their care. Hence it appears that a central clearing-house has a definite place in a school system because of its educational stimulation and its economy.

(3) *The motion picture*—The motion picture is an educational influence and a teaching tool that requires the most intelligent consideration by the school officials. Perhaps more blunders have been made in spending tax money for motion pictures than for any other school equipment. That the motion picture has a great influence upon the ideals and attitudes of children has been found by the research of the Payne Memorial Fund.[3] The school will use in the future more and more of the new educational motion pictures but not the commercial films which are designed for entertainment and not instruction. This is a distinction not made often enough by educators.

The motion picture is in two forms for use in the schools: the silent and the sound, either of which may be in 35 mm. or 16 mm. The 35 mm. sound motion picture is too expensive for the ordinary school and so has not become a classroom tool. This expense of the 35 mm. film is due to the cost of the projector, the necessary fireproof booth, the trained operator, and the rental of film. Such expensive equipment has its use only in the large school auditorium and its cost should not be charged to the budget for classroom learning aids but rather to entertainment and recreation.

The 16 mm. or narrow width film with sound is not yet perfected for class use at a reasonable cost. The 16 mm. silent motion picture film has reached such a standard of simple projection and low cost, that it may be considered a classroom tool. The vital point in the 16 mm. film as an aid to the lesson is its simple projector and the subjectmatter of the film adapted to classroom use. It is only within the last five years that earnest efforts have produced 16 mm. films suitable for school use. It has been demonstrated by scientific tests, that the film lesson is a superior method of presenting certain ideas of action. The adjustment of the film lesson to the learning ability is being done in many schools with excellent results.

In Cleveland some of the problems of films and projectors have been partly solved by the educational museum which has established a film library and purchased the projectors which are loaned for a semester. The film library consists almost entirely of 16 mm. silent subjects in the geography, science, history, and other school subjects. Many of these films are in duplicate in the film library. The cost of each film varies from $10 to $20 each. Some films have been shown two hundred times and they are still in excellent condition due

[3] See Chapter X of this yearbook.

to the expert care given them. By this circulating library of films, the schools use more than 5000 classroom film lessons each month. The Cleveland system operates like any central clearing-house and it gives a citywide low cost service. At the beginning of each semester the films are carefully scheduled as requested by the programs submitted by the different schools. Each film is loaned for one week and this period seems to cover the necessary needs for even the largest schools.

The 16 mm. motion picture projectors are owned and serviced by the educational museum. These machines are simple, sturdy, and reliable. The repair, renewal of lights, and adjustments are done at the museum which also trains the teacher in the simple operation of the machine.

The plan for making citywide use of the 16 mm. film from a central organization can be applied to a county or to a state, because the 16 mm. film is non-explosive, light weight, and can be shipped by mail at a very small expense.

Inventory of educational aids in the educational museum—An inventory of all aids stocked in the educational museum is summarized in Table 1. A unit is a set of materials that is used to aid learning. It may consist of several pictures, of many lantern slides, or it may be an exhibit with several specimens.

TABLE 1—UNITS OF EDUCATIONAL AIDS IN THE EDUCATIONAL MUSEUM, 1933

Subject	Number of units	Subject	Number of units
Literature	110	Elementary Science	1682
Civics	2	Geography	3049
Hygiene	168	History	976
Physiology	120	Biology	108
Safety	26	General Sciences	228
Education	6		
Art	964	Total	7530
Music	91		

To prepare the above units the following materials have been necessary: 85,950 lantern slides arranged in 2865 lesson units; 90,570 mounted pictures arranged in 3019 lesson units; exhibits and specimens arranged in 1189 lesson units; motion picture lessons in 16 mm. films, 589.

Circulation statistics—In 1920-21 the educational museum circulated 5556 units. Five years later 17,332 units were distributed. In 1932-33 the total had risen to 156,045 units. The average turnover of all units is 22 per year.

The average service to each school building for a year shows how wide-spread the service is thruout the school system. Each school building received, on the average, during the school year 1932-33 the following units: 934 sets of materials, 272 lantern slide sets, 242 mounted picture sets, 134 exhibits, and 170 motion pictures. On the average, each school building used 5000 lantern slides, 6000 mounted pictures, and 170 motion picture films. It would be impossible for each school in Cleveland to stock in their building the materials which they used during the year.

Cost of educational museum service—In 1925 Cleveland expended a total of $23,013 for its educational museum. This expenditure increased steadily to a total of $44,838 in 1930. In 1932 the general financial crisis had reduced the outlay to $15,793.

The outlay for capital investment during the above years has been a little more than half of the total budget; while operation, breakage, repairs, and replacement have consumed the remainder. It is of interest to know that breakage and repairs are small. The method of mounting pictures and the type of material used has made the pictures last unusually long. Some of them have been in circulation more than fifteen years and are in good condition at present. This brings the cost very low on the circulation.

The cost per unit of the circulation from a central organization is a very important item in this plan of providing learning aids to a school system. Computing on the basis of the actual number of units circulated and the total budget, the cost for each unit circulated was $1.22 in 1925; $.41 in 1930; and $.08 in 1932. The high cost of the first year recorded is due to the large amount expended for the capital investment and the low cost for 1932 is due to the large increase in circulation and the low budget.

IT IS NOT ALONE the man on the street who questions changes in our schools. There are elementary-school principals who do likewise. Afraid of an experimental method which must sort that which is effective from what is ineffective, ultra-conservatives want, at all costs, to remain static, undisturbed, untroubled by "new-fangled" innovations.—Bryan, H. Eloise, see p. 278 of this yearbook.

FUNCTIONS OF A CENTRAL VISUAL EDUCATION DEPARTMENT

W. W. WHITTINGHILL

Assistant Director, Department of Visual Education, Public Schools, Detroit, Michigan

NEARLY THREE CENTURIES AGO Comenius, the Moravian educational reformer, urged the use of pictures and prints to give concreteness to the subjectmatter of the schools. His program was not labeled visual education. However, it was identical in many respects with our presentday principles and practises of visual education. During the last fifty years the record of educational progress is dotted with the introduction of many visual aids. In the last fifteen years visual education has attained a recognized place in the public schools. Today it is an integral part of the curriculum. It is a curricular science which animates the printed page, the most frequently used of all modes of communication. Simultaneously with this development as an integral part of the curriculum, many cities thruout the nation have established central departments of visual education.

DEPARTMENTS VARY WITH LOCAL NEEDS

Surveys of visual education departments reveal many types of organization. The main factors which determine personnel organization are: school population, city area, administrative organization, supervisory organization, teacher training, finance, equipment standards, visual aid libraries, and service facilities. In a city where visual aid libraries are placed in each school it is logical for a director of visual education to guide the program with the full cooperation of principals and teachers. In some cities teachers of science direct the visual education program in addition to other duties and responsibilities. These two plans are characteristic in the small city or town.

One city with a department personnel of forty members carries out a very fine program of visual education. Here a central department directs and controls visual education on a citywide basis. In addition to the central department libraries of visual aids, each school also has a partially complete library. The department selects, distributes, and supervises the use of visual aids in the classrooms and the auditoriums. Quantities of visual aids are produced in the department's headquarters. Such a large program of work necessitates a large personnel.

In another city comparable in size to the one just described the central department numbers ten or fifteen persons. They too direct and control a citywide program of visual education. However, they do not direct the program of supervision. This program is handled directly by a staff of specialists already organized for the supervision of instruction. This same staff of supervisors is responsible also for the course of study organization and the selection of visual aids.

Cooperation is the keynote which determines the success or failure of any department regardless of size. Local factors including those mentioned above determine the proper personnel for central departments.

THE ORGANIZATION IN DETROIT

Centralized departments of visual education vary in form of organization according to the needs of the schools they serve. On the other hand, there seems to be considerable uniformity in expressed functions of these departments. The balance of this article describes some of the major functions of the department of visual education of the Detroit public schools. They are typical of the functions of central departments in a number of city school systems.

At the present time the Detroit Department of Visual Education directs and carries out eleven definite programs. They are: teacher training, selection of visual aids, film program, slide program, exhibit program, photographic program, equipment program, delivery service program, equipment service program, phonograph record program, and radio program.

Use of films—The film program activities include the review of all films with the instruction committees. Those films approved are recommended for purchase. Complete inspection is given to all films by the department. Films are stored in a vault and all films are distributed direct to schools in accordance with the requests of teachers. Films are often produced by the department which, of course, requires scenario writing, evaluation, and completion.

TABLE 1—THE NUMBER OF FILMS USED AND THE PERCENT OF CHANGE AS COMPARED WITH PREVIOUS YEARS

Years	Reels	Percent
1928-29	5,560	....
1929-30	6,763	+21.6
1930-31	11,030	+63.1
1931-32	10,312	− 6.5
1932-33 (Nine months)	14,034	+36.0

Table 1 shows the number of films used during the five school years beginning in 1928-29. Except for the year 1931-32 the increased use of films was rapid. Use in 1932-33 was 152 percent higher than in 1928-29. The number of films shown in 1932-33 was almost 42 percent of the number used in the four previous years.

Selection of visual aids—First-hand experiences for children in the classroom are difficult to secure. One of the best ways to vitalize the program of instruction is thru the use of properly selected visual aids. For example, in the science program sponsored by the public schools it is necessary to bear in mind the minimum and maximum requirements in the use of visual aids. A careful diagnosis of any unit of a subject or grade should result in a balanced " prescription of visual aids " necessary for the teaching of this unit. Care and caution should be exercised in filling this prescription. The visual aids selected should reinforce the regular methods of the teacher. They should not be used for the sake of visual aids alone.

A practical procedure to be used in the science program involves selection of visual aids by a committee. The group should include the director of science, the head of the science department of the school, two science teachers, and the city director of visual education. The committee should survey the field of available aids which relate to this unit. These aids should be obtained and presented to the committee for previewing purposes. After the visual aids have been previewed the score sheet will reveal the recommendations of the committee. This procedure utilizes the special skills of the committee personnel and should guarantee the best visual aids. Thus, we will have available visual aids in the form of films, slides, photographs, film slides, still films, exhibit material, charts, maps, and museum materials. A similar procedure should be followed in selecting visual aids for all subjects of the curriculum. The ultimate result of scientific selection is a specialized library of visual aids of inestimable value to all teachers.

Course of study organization—The course of study should include a plan for visual aids in accordance with the fundamental principles of organization in that course of study. In this way teachers when developing a particular unit of work, will find listed in the course of study the available visual aids for the unit. The listing of these visual aids by units enables a teacher to use those which are best suited to her particular technic of teaching. The use of too many visual aids may confuse rather than clarify instructional activities.

Teachers who use visual aids have an additional set of tools by which they are able to present education in its more natural setting.

Another important reason for having visual aids woven into the courses of study is that such organization makes possible a standard procedure for the ordering and use of the materials. At present, teachers have a very heavy teaching load. Unless visual aids are properly organized in the courses of study, the teachers are confronted with just one more irritating problem.

Distribution of visual aids—The plan of distribution of visual aids is of course determined by the number of schools to be serviced and the number of requests from each building. A visual aids request blank, made for the purpose of ordering visual aids, facilitates any plan of distribution (See Figure 1). When visual aids are distributed from a central department, it is necessary that the request blanks be received at the department one semester in advance of the date of use. This procedure enables the department to make reservations for all requests and also to return to teachers copies of their requests. After copies of requests have been received by teachers they have no further responsibility relative to obtaining these visual aids. The aids are delivered to the office of each building. The teacher simply gets the material from the office and returns it to the school office as indicated by the time period on the schedule. The distribution of visual aids in any city, small or large, should be carried out in a manner that relieves the teachers of all mechanical routine responsibilities.

Equipment facilities—In addition to the scientific selection of visual aids and the proper organization of these aids in the courses of study it is quite essential that there be made available minimum equipment facilities in each building. The person in charge of the central department of the school system should be a member of an equipment committee. This committee selects equipment for all buildings. There has been a great amount of discussion as to the minimum visual education equipment for elementary, junior and senior high schools. It is not unusual to find in some cities a large amount of equipment, some of which is partly covered with "gold" dust. Therefore, each school should have equipment facilities which will answer the requests of the teachers as partially determined by the type of curriculum. Standard equipment for an elementary, junior- and senior-high school becomes a part of the regular budget expenditure.

Equipment service—At the present time there are 736 complete units of visual education equipment in the Detroit schools. This equipment includes 16 mm. motion picture projectors, 35 mm. mo-

DETROIT PUBLIC SCHOOLS

VISUAL AIDS REQUEST BLANK

VISUAL EDUCATION DEPARTMENT
9345 Lawton
Garfield 1235-1236

List only one type of Visual Aid on this blank

SCHOOL _____ TEACHER _____ DATE _____

Reserve Classroom Films _____ Auditorium Films _____ Lantern Slides _____ Victrola Records _____

only on date specified _____ or as soon as available _____

General information and complete directions are given on reverse side. Please follow these directions in ordering Visual Aids

TITLE	CALL NO.	DATES OF USE	CODE	DO NOT USE THESE COLUMNS		
				DELIVERY DATE	DATES OF USE	PICK-UP DATE

tion picture projectors, stereopticons, combination opaque and slide projectors, micro-projectors, and micro-attachments. The visual education department services this equipment by daily inspection and repair. Teachers operate and use this equipment in classrooms and auditoriums. Since teachers are teachers, not mechanicians, they should be relieved of this technical work.

Research studies—The department of visual education cooperates with principals and supervisors in carrying out a broad program of research studies. Some of these studies are as follows:

(1) Proper objectives for a broad program of visual education.
(2) Relative values in a general program of instruction of the following visual aids: slides, film slides, still films, auditorium films, classroom films, exhibits, photographs, charts, maps, and museum materials.
(3) The degree of differentiation which should be made between the visual aids used for classroom instructional purposes and those used for auditorium purposes.
(4) The degree to which visual education can be made a factor in bringing about local, national, and international relationships.
(5) Organization of a program of supervision accompanied by measurements of the use of visual aids.
(6) Organization of state and city departments.
(7) Exhibit standards.
(8) Educational talking pictures.

Visual education handbook—It is essential to have a handbook on visual education. In this handbook may be incorporated instructions and suggestions on how to use visual aids; rules and regulations for ordering materials; rules and regulations for operating equipment; and care of films, slides, screens, and projectors.

Budget—The visual education department budget is made up annually. This budget covers all phases of the eleven programs directed by the department. It is classified under the division of visual education in the board of education budget and receives the same consideration as any other division therein.

Supervision and teacher training—Evidence points clearly to the fact that the technic of teaching must be enriched by expressing classroom and auditorium methods more completely in terms of social activities. The advancement of science in education during the last twenty years has aided materially in establishing a better understanding and interpretation of the diversified objectives and outcomes of life. The proper use of visual aids gives a greater variety of experiences to all pupils than could otherwise be obtained and also serves as an interpretative basis for their environment. Visual aids are an unusual agency for establishing reservoirs of retentative power

which may be used to orient the most complex problems of public education.

These positive results cannot be attained without proper supervision. The program of supervision must take into consideration the purposes underlying the use of visual aids. Supervision by the principal, the director of science, or the head of the science departments must be a cooperative program in which the teachers participate. Furthermore, it is very desirable to hold the viewpoint that all principals and teachers are members of the local department of visual education and that the department exists with and for them. This coordinated plan of procedure improves the teaching and develops the whole child in a balanced education.

The department of visual education directs an equipment training program for all principals and teachers. Demonstrations on how to operate equipment are given to teachers in all buildings at the request of the principal. These demonstrations acquaint the teacher with the operation of the equipment and are similar in purpose to the demonstrations given of courses of study and textbooks.

THE FULL POTENTIALITIES of visual aids have not been realized in most cases because of certain unsolved problems involved in their use. The problems have been unsolved largely because teachers and administrators have failed to realize fully the importance of the technical or mechanical side of the device. They have not made the aid a ready servant in the teaching process. The teacher must know just when and why the device is to be used. It should enable him to do that particular part of teaching with that device better than in any other way.—Stoddard, A. J., *N. E. A. Proceedings*, 1933, p. 789-90.

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CHAPTER III

PICTORIAL AND GRAPHIC AIDS

EDITORIAL COMMENT

THE USE of pictures extends far back into the history of the human race. By means of pictures the early caveman left the story of his exploits and descriptions of prehistoric beasts. The Egyptians developed a picture-language whereby, according to Van Loon, we know better the story of the Nile Valley than we know our own Mississippi Valley. The Chinese writing of today retains characters which are based upon early pictographs.

The attitude of the child of today toward pictures is succinctly expressed by Alice in these words: "What is the use of books without pictures?" Indeed, what would be the attraction of almost every type of elementary-school work without pictures? This fact is clearly revealed in the articles of this chapter. Several contributions tell how to collect, to mount, and to file flat illustrations. One article shows the application of a picture technic to the subject of geography. Two articles describe in detail how to teach pupils to make and to use maps. The final discussion indicates how graphs and diagrams may be used effectively in testing the knowledge of pupils.

There are obviously three aims behind the use for pictures in the elementary school: (1) recreation, (2) the acquisition of knowledge, and (3) the development of appreciations and attitudes. Undoubtedly good teaching combines all three of these purposes often in the same activity. This happy combination is found abundantly in the research-library technic so fully set forth in the 1933 yearbook of our department. Now this 1934 yearbook adds further to the field by filling out the details of the technics for using pictures effectively. Thus the supervisory backgrounds of the members of the Department are given perspective, depth, and character.

As in the use of all aids the care and administration of pictures is an important item. Pictures of ephemeral value must be collected quickly, used while they are vital, and dispatched with promptness. Pictures of more permanent value must be carefully mounted, properly labeled, and made easily accessible. Few principals should overlook this opportunity to enrich instruction at relatively little cost.

The bibliography at the end of the chapter contains many citations which will further enlarge upon the aspects of the topic discussed in this chapter.—*Editorial Committee.*

PREPARING AND FILING MOUNTED MATERIALS

MARIE E. ALEXANDER
First Grade Supervisor, Training School, State Teachers College, Harrisonburg, Virginia

THIS IS THE DAY of enriched materials in teaching. Teachers are collecting pictures and clippings at little or no cost, but the big problem is "What should be done with them?" They cannot be used effectively unless they are put in usable form. In the main, these materials fall in two large classes—ephemeral and permanent.

The term "ephemeral" is applied to those materials which are of a transient nature and need revising and discarding from time to time. Pictures and clippings cut from magazines and newspapers are example of such materials. "Permanent" materials are materials which will be of use indefinitely, such as pictures of famous musicians or reproductions of works of art. It is the purpose of this article to outline methods of treating only those ephemeral and permanent materials which should be mounted and filed.[1]

MOUNTING EPHEMERAL MATERIALS

Pictures—The pictures are usually those obtained from newspapers, magazines, travel booklets, descriptive folders, or rotogravure sections. Simple steps in mounting such pictures for filing are:

(1) Cut out the picture neatly—preserving the title or description to be pasted on the back of the mount.

(2) Select a mounting which is suitable for the picture:

(a) Gray, tan, brown, and dull green are the best colors to use.

(b) The color should echo or repeat one of the dominant colors in the picture.[2]

(c) The color of the mounting should be within range of the picture—not lighter than the lightest area nor darker than the darkest spot.[3]

(d) The color of the mounting should be dull enough in intensity to give the picture a chance to be seen.

(e) Mounting boards may be any cardboard or stiff paper which is substantial enough to keep shapely corners with use. The following are examples of such boards:

(1) Bristol board—may be obtained in sheets $22\frac{1}{2}'' \times 28\frac{1}{2}''$ at forty to seventy cents per dozen sheets depending upon the weight.

(2) Strawboard—This may be obtained in sheets $12\frac{1}{2}'' \times 13''$ at fifty to seventy cents a dozen sheets.

(3) Chipboard—The cost of this board is usually seventy to eighty cents for a dozen sheets $22'' \times 28''$.

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[1] For further details see the following: Goldstein, Harriet and Goldstein, Vetta. *Art in Every Day Life.* New York: Macmillan Co., 1925, 465 p.; Mathias, Margaret E. *The Beginnings of Art in the Public Schools.* New York: Charles Scribner's Sons, 1924, 119 p.; and Mathias, Margaret E. *The Teaching of Art.* New York: Charles Scribner's Sons, 1932, 356 p.

[2] Mathias, Margaret E. *The Beginnings of Art in the Public Schools.* New York: Charles Scribner's Sons, 1924, p. 92.

[3] Mathias, Margaret E. *Op. cit.*, p. 92.

(4) Heavy weight construction paper costs about $1.20 for a dozen sheets 20" x 26".

(5) Construction paper—A package of fifty sheets 12" x 18" can be bought for approximately forty cents or a package of 9" x 12" for twenty cents.

(f) When there are two pictures or a picture and a poem which should be kept together, some teachers prefer to paste them in a letter-size manila folder—one on each side. This folder can then be filed with the correct title written on it.

(3) Cut the mounting two to four inches larger than the picture to be mounted. The thicker boards should be cut with a sharp knife guided by a steel-edged ruler.

(4) Place the picture on the mount so that the bottom margin will be slightly wider than that at the top and sides. The margins at the top and sides of the picture should be equal if the picture is square. If the picture is longer vertically, the bottom margin should be widest, the top margin next in width, and the sides narrower. If the picture is longer horizontally, the bottom should be the widest, the side margin next, and the top narrowest.

(5) When the picture is exactly straight on the mount, hold it in place and put a bit of paste under each corner and press it down. Or, put a light dot with a pencil at each corner of the picture, turn it over to put the paste on each corner, then paste it on the mount with the corners exactly on each dot. The picture should be pasted well at the four corners.

(6) Place the freshly mounted picture under a heavy weight to be pressed until dry. This will prevent warping. If the pictures are pressed between newspapers care should be taken to put plain white paper over the picture since print sometimes rubs off on the damp picture.

Newspaper and magazine articles—Our newspapers and magazines often contain articles which are of great value as reference material. Such articles can be made available and durable by mounting and filing them. A very good way to mount them is as follows:

(1) Cut out the article carefully.

(2) Write on it the name and date of the publication from which it is clipped.

(3) Cut the article in pieces as long as the folder or envelope in which it is to be filed.

(4) Cut a piece of manila tag board the size and shape of the article before it was cut, thus allowing for margins on each side.

(5) Paste the article on the tag board as it was before it was cut—leaving a space of about one-eighth inch between pieces for bending.

(6) Now, bend the tag board the length of the folder or envelope in which it is to be filed.

(7) Put the pasted article under a weight to press until dry.

MOUNTING PRINTS

Good reproductions of works of art should be mounted substantially because they are "permanent" materials. For the color of the mount follow the principles listed in the section on pictures above. For mounting boards, select two mounting boards—heavy and light weight. The heavy board may be a cheap board while the light-weight

board should have a better finish. In mounting the pictures the following procedures will be found useful:

(1) Cut a heavy and a thin board for each picture, making each board four to six inches larger than the print. It is desirable for filing purposes to make all mounts uniform in size; so some of the margins will necessarily be wider than others if the pictures are different sizes.

(2) Place the print on the board with the better finish leaving margins as indicated in the section on pictures.

(3) Mark very lightly around the print and cut out a hole in the board about one-fourth inch smaller than the size of the print, making the hole one-eighth inch less on all sides than the print. In cutting out the hole, slant the blade of the knife away from the center of the board so that an edge similar to the beveled edge of a mirror will be next the picture. A frame has thus been made for the picture.

(4) Now paste the picture on the heavy-weight board with exactly the right margin at the bottom, sides, and top to put the picture in place for the frame which has been cut out of the better grade of mounting.

(5) Paste the frame of the better grade of mounting on the heavy mount. Paste well around the outer edges. The print now has a beautiful, durable mount and can be filed.

A Simplified System of Filing Mounted Materials

Ephemeral materials—The following suggestions will be found to be practical:

(1) Classify the mounted materials under suitable headings. Try to get functional headings. To do this ask such questions as these: "What will the teacher call for when she needs this material?" Then, give it that heading. A few suggested headings are listed here: Africa, Airplanes, Animals, Boats, Children of Other Lands, Designs for Dishes, Furnished Rooms, Indians, Meteors, Money, and Toys.

(2) Write on the back of each piece of material the heading under which it is classified and a number. For example, *Toys 1* would mean that the picture or article should be put in the envelop or folder marked *Toys* and that it should be the first piece of material in the front. Thus, when a piece of material is taken out of the file, it can be replaced quickly.

(3) Write each heading on a folder or a large envelope. The envelopes are preferable and they can be made from heavy brown wrapping paper or they can be bought. The $11\frac{3}{4}'' \times 9\frac{1}{2}''$ envelopes cost $3.75 per 100. Those $14\frac{3}{4}'' \times 9\frac{1}{2}''$ cost $4.05 per 100.

(4) Put the materials in their proper folders or envelopes according to names and numbers. All clippings and pictures on one topic will be together.

(5) The folders or envelopes prepared in this manner should be placed according to subject headings in a filing box or case behind alphabetical guide cards. For example, *Africa, Airplanes,* and *Animals* should be in the order indicated behind guide card *A*.

(6) If there is more material on a subject than one envelope will hold, make two or more envelopes for one subject and letter them as *Animals A, Animals B, Animals C*. Then, *Animals B3* on the back of a particular article would mean that it should be placed in the second folder or envelope on animals and it would be the third piece in the folder or envelope.

(7) A card file of all materials which are in the large file should be kept. It enables one to find the materials more quickly.

(a) Use a 3″ x 5″ filing card. In the middle of the top line write the subject heading under which the picture or article is filed.

(b) On the second line, using about half that indentation, write the name of the picture or article using lower case letters except for beginning the first word and for proper names. Skip a space below that line and write the number of the filing drawer or box, the name of the folder, and the number of the piece of material. *Drawer 3, Animals B3* on a card would tell exactly where to locate the material.

(8) Colored filing cards may be used to distinguish clippings from pictures, as: blue for pictures and yellow for clippings.

(9) File these 3″ x 5″ cards according to subjects behind alphabetical guide cards in a 3″ x 5″ filing box.

Prints—Provide a separate drawer or box for prints. They should not be mixed with ephemeral materials. Place the prints behind guide cards made for the nationality of the artists. For example, write *English* on one guide card and place all prints of English artists' work behind this card. In the same way file the prints for other nationalities.

Make two 3″x5″ filing cards for each print. On the first, write the nationality of the artist on the top line for the subject heading, the name of the artist with his dates on the second line, and the name of the picture on the third line. Below this write the number of the drawer in which the print may be found. On the second card, write the topic with which the picture would be classified. For example, the picture "Woman Churning" by Millet could be used with a study of home life; therefore the subject "Home Life" would be written on the top line. The second line should contain the name of the artist with his nationality, and the third line the name of the picture. Below on the card the number of the drawer in which the print can be found and the name of the guide card behind which it is placed should be written.

File the first 3″x5″ card in the filing box behind the guide card "Prints." File the second 3″x5″ card behind the guide card "Home Life." Thus, the picture could be found by looking under the nationality or if pictures are needed to use in a study of home life, it can be located by looking at the cards on that subject.

SOURCES OF MATERIALS FOR MOUNTING AND FILING

Mounting boards, construction paper, and tag board may be obtained at reasonable prices. Ask the following companies for necessary catalogs and samples: Practical Drawing Company, Chicago; Milton Bradley Company, Philadelphia; and Prang Company, New York.

Clipping envelopes, guide cards, and filing cards of different colors may be obtained from Gaylord Bros., Inc., Syracuse, New York, or from local dealers in library supplies.

Filing boxes and metal cases may be obtained from local houses dealing in office supplies and from book stores. The small letter-size cardboard filing boxes range in price from fifty cents to one dollar. Larger cardboard boxes and metal cases may be bought at prices which range from two dollars up.

Very good filing drawers can be made by a local carpenter. Care must be taken to have the drawer made deep enough to permit it to be opened without "hanging" or "catching" the folders. Orange boxes make very good filing cases if they are lined with paper and covered so as to keep out dust. By using home-made filing cases, a collection can be started with small cost.

EARLY IN THE GRADES we begin to give the children a knowledge of lands other than our own and of the people who live in them. Without pictures, we should be sadly at a loss to convey to them more than the vaguest and most erroneous notions of those people. We seek not only to know something about peoples, but to understand why they are different from ourselves, to be able to see these differences as difference, not necessarily as inferiority, to recognize the things they have in common with us.—Israel, Marion L., *N. E. A. Proceedings*, 1931, p. 955.

ALBUMS AS TEACHING AIDS

E. A. BROWN
Principal, Kuhio School, Honolulu, Hawaii

THE VALUE of mounted pictures as an aid to teaching is so familiar to teachers that little emphasis need be given to the desirability of making them a factor in education. It is well to note in passing, however, that many teachers fail to enhance the efficiency of their services because they do not take advantage of their opportunities to make mounted pictures an important part of their equipment. Their attention should be directed to the demonstrations of utility vital to education, thru the medium of mounted pictures that are to be witnessed in classrooms, school libraries, and public libraries.

The question of chief concern with teachers is how to collect, classify, and mount pictures so that they will serve their purpose most completely. This paper will be confined to a consideration of mounting pictures in albums. The writer has for some twenty years made use of the plan to be suggested and is convinced that its adoption by other teachers will prove helpful.

How to make albums—The practise of tailoring establishments that do a large mail order business is to provide clothing stores thruout the country with large, well-bound books containing samples of cloth from which men's suits are made to measure. The pages in these books are very heavy. They measure about sixteen by eighteen inches. The books are useless to the merchant after the close of the midyear season. They can be procured for the asking and make ideal scrap albums for schoolroom purposes.

The clothing samples are torn from the pages. The advertising contained on each page and other undesirable features are covered by pasting a good quality of art drawing paper over the page. Dealers in paper will cut these sheets to fit the pages at approximately one cent per sheet. An excellent paste can be made with flour and water from recipes that are easily obtainable. Care should be taken to put a small amount of cresol or other poison in the mixture to prevent the destruction of the book by insects that have a taste for paste. As soon as the drawing paper has been pasted on the pages, the book should be laid on its side and a heavy weight placed on it for a few hours until the moist papers are set. Then the book should be stood on edge with the pages open to the air until the paste is thoroly dried, to avoid mold that will otherwise ruin the book. Advertisements on the covers may be obliterated by one or more coats of black enamel

paint. On this background the title of the book may be painted in white. The book is now ready to receive pictures.

Sources of pictures and their arrangement—Pictures may be secured from many sources without expense. Discarded magazines furnish a wealth of material. The art supplements of newspapers supply many valuable pictures. These should be cut from the publications and trimmed with special care. An album, properly made, will be for many years a source of pleasure and information for a class of children and will repay the painstaking teacher for the best skill put into it.

The pictures should be carefully classified. Those pertaining to animal life should be placed in a book by themselves. Likewise a separate book should be filled with pictures of home life. One book might illustrate American history, one might be devoted to war, one to adventure, one to butterflies and others to insects, and one to plant life.

Few children possess the ability to justify their being intrusted with the making of such an album when it is to become a permanent and important part of the teacher's equipment or a useful addition to the school library. But children should be encouraged to make albums for themselves. Their books will be less pretentious and less durable, but the makers will derive much benefit from the experience of creating something of their own.

Albums as teaching aids—Our school has one such album containing pictures of the Great War. It was made during the conflict. The pictures were procured from the *New York Times,* the *Pictorial Review,* the *Ladies' Home Journal,* and other publications. Most of the pictures are in colors. Pupils never tire of this album. It has been in constant use since it was made. It is worn and mussed from the thousands of little hands that have turned its pages but is still one of the most attractive volumes in our library. Pupils derive from it a vivid understanding of incidents in the terrible struggle which it portrays. They are impressed by the humanitarian scenes representing activities of the nurses, the American Red Cross, and the dogs bearing the sign of the Red Cross. They are horrified at the views indicating the cruelties and suffering that are inseparably connected with bloodshed. They are moved to a deep sense of sympathy for the war orphans that are presented so graphically. They experience the moods and sensations that are incident to war. They are led to decry the folly of war and to declare themselves the friends of the children of the entire world, regardless of race or country. This book is one of sensations. It arouses emotions during school periods that are de-

voted to "browsing" and provides reference material that is needed occasionally in the pursuit of a project.

We have an album filled with pictures that appeal to the esthetic interests of children. It shows child life in many interesting relationships. Its chief usefulness is found during the "browsing" period. It is "dreamy" and restful. Pupils enjoy its pages when they do not feel inclined to read. It seems to fill a need in the lives of the children better than any other book.

One album illustrates American history. Most of the pictures are colored. Many of them are copies of paintings that appear from time to time in our leading magazines. They are arranged to present the story of American civilization in its proper sequence. The pupils find this picture book attractive and helpful with their projects. It is one of the most used volumes in our library. It introduces pupils to a copy of the painting by Millais entitled "The Boyhood of Raleigh." "Elizabethan Galleons" as painted by N. C. Wyeth is represented in striking colors. Incidents in the life of Columbus are impressively pictured. Plymouth Rock is made real to the children. Experiences of the Pilgrims and other colonists are objectively presented. The relationships of the Indians to the settlers are illustrated by prints of masterpieces in a manner to arouse and maintain interest. The manners and customs of the people, changing significantly from period to period, are contrasted and clarified in the imagination of the pupils. The colored prints of the revolutionary period are of striking interest. The life of Lincoln is made dearer and more realistic by the wealth of art collected and preserved in this book. Thus the pupils are fascinated by the pictorial study of the United States from its first settlement thru the remarkable career of Woodrow Wilson. What teacher will entertain a doubt that the pages of the ordinary text in history will be more intensely interesting after such a charming introduction!

The book on animal life is introduced by the presentation of butterflies in colors. Pigeons and other domestic fowls are shown in their most attractive appearances. Fishes, turtles, and crocodiles invite the attention of children. The Portuguese man-of-war, which is so well known to our island swimmers and greatly dreaded by them, is beautifully illustrated. The horse and the dog, of many breeds, are presented in their most friendly relation to the human family. The deer, the rabbit, the moose, and other wild beasts are shown in their natural environment. The cow family, with its many variations, is reproduced in connection with its many contributions to the enlightenment of children and adults. Song birds and birds with beautiful plumage that excite the admiration of us all are not omitted. Ani-

mals of the jungle—the elephant, the leopard, the tiger, the lion, the monkey, and many others—are given their full measure of representation. The sheep, the domestic goat, the wild mountain goat, the wolf, the reindeer with his Eskimo master, and bears of many kinds, possess an attractive appeal to old and young, and all have a place in this album.

Teachers express their amazement at the constancy and earnestness with which pupils study the illustrations in this collection. If such interest could be induced thru ordinary class procedure, disciplinary problems would cease to exist and pupils would acquire the study habit so fully that its continuance during their entire lives would be assured. Surely, this is a teacher's activity that deserves promotion. It will pay big returns on the money and energy invested in it.

One album contains keepsakes of interest to pupils and teachers. Photographs of classes, of groups of pupils who participated in a playlet or game, of the faculty, and of other organizations are preserved in this book. Pupils demonstrate their pride in their own pictures and the pictures of their brothers, sisters, and friends. Other mementos included in this volume are certificates of award in competitions and ribbons won at fairs. We were at a loss to know how to care properly for these valuables as the accumulation became burdensome, until we decided to put them in a scrapbook. Now they worry us no longer. They constitute just another book in our library. They are conveniently located for examination and their safety is assured.

At one time we procured about one hundred valuable pictures representing Hawaiian life from the discovery of the islands thru a century and a half to the present day. They were "photostat" reproductions of original drawings, engravings, lithographs, aquatints, and photogravures. There are pictures of the early Hawaiian village; of the grass house of primitive times and later, showing the influence of foreign tools and building materials. There are pictures of Honolulu and other villages at various periods of time; of harbors at the time of the first visits of foreign ships and later, showing the many changes due to the rapid growth of trade in the Pacific. Many pictures illustrate the manners, customs, dress, occupations and modes of transportation of primitive times. There are pictures also of men and women prominent in the history of Hawaii. Only a limited number of sets of these important pictures were available. Their preservation presented a real problem. After mature deliberation, we decided to paste them in one of our albums. They varied in size. Some required an entire page of the big book. Others could be disposed of by mounting several on one page. When the task was done,

it proved to be completely satisfactory. The pictures are in good condition after several years' use and they give promise of being serviceable for some years to come.

Conclusion—It is with pronounced enthusiasm that the writer recommends the mounting of pictures as indicated herein. Such a practise over a period of time will provide the teacher with a wealth of objective teaching material that will vitalize his teaching and greatly improve the results of his professional efforts. It will serve as an inducement to him to be alert for pictures of practical worth and will enable him to realize double returns on his professional and recreational reading.

THE POSTER can be an organization of mental vision producing a harmony, a rhythmic organization of diverse things into a whole. It does offer stimulation to recognize the great breadth and importance of the art field.

In the first place the poster is an expressive form of American art. The poster, with its direct appeal, is indeed the artistic language of the practical American people. Nothing probably expresses the American mind better than a good poster.—Smith, Marrow, Fourth Yearbook, Department of Classroom Teachers, 1929, p. 15.

TEACHING GEOGRAPHY THRU PICTURES

BENITA R. BLOOD
Principal, Fuller School
and
ELIZABETH J. KAASA
Principal, Northrop School, Minneapolis, Minnesota

CONCRETE IMAGERY is fundamental to clear geographic thinking. If from the beginning the child is given concrete images in the way of real landscapes or of landscape photographs upon which to base his reasoning, he soon proves that he can do a high type of thinking of a geographical nature. The best means of knowing peoples is to live for a time among them and watch them at their work and play. As we cannot take classes to see actual regions we bring landscapes to them thru photographs. The child is guided to work with a picture as the geographer does with a real landscape when he selects signs of man's work (cultural features) and seeks to relate these to the natural features.

Use of pictures as source material—The child must be trained to look upon pictures as primary sources of facts needed to understand the people about whom he is studying. Hence pictures must be used as first-hand source material and not merely for supplementary interest-adding use. The assignment should lead the child to a purposeful study of a few carefully chosen views. It should give him a definite geographic end to reach which will guide him to select the cultural features in each scene and to search for their relation to the natural features.

Thru this work, the child soon discovers that pictures tell some things and suggest other topics for further study and research. Maps and reference books are sought to clear hazy concepts and to answer questions where the desired information cannot be gleaned from the pictures. The results of this landscape study are checked by some simple interesting means such as the listing of the features observed, the making of captions to fit the pictures, and the comparison of the pupils' captions belonging to the views.

For example, in the fourth grade, when beginning the study of the Congo Region as a type region of the world, seven or eight scenes may be hung at eye level for pupil study, with the following directions to guide the work:

> As you look carefully at these scenes in the Congo Region, list at least eight ways in which you find people of this land are living differently from the people you saw living in Arabia. As you study the pictures try to find in the landscape reasons for each difference which you note.

At a higher grade level in the study of the Western States of the United States, the following directions may be given:

As you study these western scenes, give each picture a title that tells what you think it shows some people in this section do to make a living. When you have finished, compare the titles you gave each picture with the list you will find on the bulletin board and correct any title in your list which does not have the same meaning as the corresponding title in the checklist. Return to the pictures and try to find reasons why people in this section have chosen the work indicated in each view. When you have a question concerning anything in the picture which you cannot answer, write it down and try to find the answer in some of your reference books.

Use of pictures as review material—Pictures serve as excellent review material. For instance, in introducing a unit, scenes are sometimes studied with the purpose of finding similarities or differences between life in the new region and life in a land which has been studied. When a unit of work in the social studies is completed, the children may select pictures they wish to exhibit. They invite classes to their room and entertain them by explaining the scenes to them.

Use of pictures for testing purposes—Pictures are used for testing purposes to check pupils on their grasp of geographic concepts and on their ability to acquire landscape imagery in connection with the regions studied. Several illustrations follow indicating the directions given to the pupils and the scenes used in each test.

To test what the fourth-grade survey of typical regions of the world has given the child in the way of a concept of the effect of *latitude* on climate, native vegetation, and the life of man:

Directions to pupils:

Arrange Scenes 1 thru 5 as one might see them in a southward trip across North America from Arctic Canada thru Central America.

Scenes to be used with above test

(1) Negroes at work in cotton field
(2) A native village in the jungles of Guatemala
(3) Prairie wheat field
(4) Canadian trapper near home in forest
(5) Eskimos with dog sled near igloo.

To test understanding of the effect of *rainfall* on vegetation:

Directions to pupils:

The landscapes shown in Scenes 1 thru 5 differ from one another in the amount of annual rainfall each receives. Beginning with the scene where little or no rain falls, arrange these views in order of amount of moisture each landscape receives. Use scene numbers to indicate the order in which you place the pictures.

Scenes to be used with above test

(1) Jungle scene with natives at work in village
(2) Herd of cattle grazing on Great Plains
(3) Traveler in desert
(4) Open forest in California
(5) Rural scene in central states.

To test understanding of the effect of *altitude* on vegetation:

Directions to pupils:

Use scene numbers to indicate the order in which you might see the landscapes pictured in Scenes 1 thru 4 were you to climb from a low altitude to a very high altitude.

Scenes to be used with above test

(1) Heavily forested mountain side below timber line
(2) Farm in mountain valley
(3) Snow-capped peak above timber line
(4) Cattle grazing on the Great Plains.

For use at close of unit on the Rocky Mountains and Great Plains region:

Directions to pupils:

Use scene numbers to answer questions:

(1) Select scenes which show two reasons why so small an area of this vast region is used for farming.
(2) Select a scene belonging to the region of heaviest rainfall.
(3) Which scene is in a very dry area?
(4) Select scenes which show two natural obstacles men meet in constructing highways and railways in this region.
(5) Which scene belongs to an irrigated section?
(6) Which scene belongs to the Great Plains section?
(7) Select four scenes which show the opportunities the mountains of this section offer men for earning a living.
(8) Arrange three scenes as you would probably see them in traveling from a low to a very high altitude in this region.

Scenes used in above test

(1) Ranch on Great Plains
(2) Health resort in mountains
(3) Power plant near falls in mountains
(4) Heavily forested mountain side
(5) Mining in mountains
(6) Desert vegetation
(7) Snow-capped mountain peak above timber line
(8) Farm in mountain valley.

The following test on the United States as a whole might be used when a group have completed their study of the various regions of the United States:

Directions to pupils:

These are photographs which have been taken in various parts of the United States. Arrange places on your paper for four lists of views. Head one list *Western States,* the second list *North Central States,* the third list *Southern States,* and the fourth list *Northeastern States.* Place in each list the numbers of the views which belong in the section of the United States designated by the heading.

Scenes used with above test

(1) Pueblo homes in New Mexico
(2) Loading ore on lake boats
(3) Aeroplane view of New York harbor

(4) Orange groves in mountain valley
(5) Cotton field with negroes at work
(6) Sheep grazing among sagebrush
(7) Irrigation project in western mountains
(8) Cattle grazing on the Great Plains with cowboys in scene
(9) Cypress trees growing in swamp
(10) Levees with steamboat on Mississippi River
(11) Salmon trap on Columbia River
(12) Raisin vineyard in south central California
(13) Giant logs leaving forest for sawmill
(14) Gathering oysters in Chesapeake Bay
(15) Sandy desert in southeastern United States
(16) Extensive cornfield in Iowa
(17) Iron ore pit in Minnesota
(18) Moss hung trees in the South
(19) Sugar cane in Louisiana.

Geographic understandings may be checked thru the use of a single picture. For example, the children are shown the picture of a cotton field with negroes at work harvesting the cotton.

Directions to pupils:

Check the square which precedes the correct answer for each question.
This picture might have been taken in

☐ The Northeastern States
☐ New England
☐ Manitoba
☐ Georgia.

The growing season here would be at least

☐ Three months long
☐ Five months long
☐ Seven months long.

The season when this view was taken was

☐ The spring
☐ The winter
☐ The summer
☐ The autumn.

Here the summer weather is

☐ Fairly uniform in temperature with much sunshine and abundant rainfall
☐ Cool with many sunny days and heavy rainfall
☐ Dry and hot.

The winter season in this region would be

☐ Long and cold
☐ Short and cool
☐ Long and mild.

After the study of the Western States and Great Plains Region, the following test may be used with one picture:

Directions to pupils:

After you have studied this scene carefully, check "yes" or "no" for each statement.

The scene used is a picture of the Great Plains showing the foothills of the Rocky Mountains in the background and cattle grazing on the sparse grass.

Yes No (1) The population is very dense in this section.
Yes No (2) There are probably large sheep ranches in this region.
Yes No (3) The rainfall here amounts to about thirty-five inches a year.
Yes No (4) Manufacturing is carried on extensively in this section.
Yes No (5) Little land is used for farming in this section.
Yes No (6) The farms here are very small.
Yes No (7) You would be likely to find irrigated land near this scene.
Yes No (8) Lumbering is an important industry in this section.

THE PLACE OF VISUAL EDUCATION in our elementary curriculum is a topic of much discussion today. While it is recognized that teachers have always used pictures, slides, postal cards, and other visual aids in connection with their regular school work, these materials have not been organized in any systematic way. . . . . The motion picture has the advantage in cases where understanding of the action of the object requires that it be shown in motion, while still pictures appear to have the advantage where a keener study attitude is required.—Meador, Mildred, *Educational Method,* November, 1931, p. 97.

SELECTION AND EVALUATION OF MAPS, GLOBES, AND CHARTS

ERNA GRASSMUCK
Head, Geography Department, State Teachers College, Indiana, Pennsylvania

LESSONS with visual aids can produce more destructive results in education than lessons without visual aids unless teachers have been fully prepared to distinguish between good and bad materials, between truth and error. Attractive pictures, maps, and other sensory aids, giving one-sided or distorted concepts of regions, peoples, things, or conditions, may be more malicious than oral word descriptions by pupils or teachers. Their very attractiveness may be a menace and result in the learning of errors.

It is not a matter of having a map or a picture but of using *effectively* the geographical or historical map, or geographic, scientific, or social picture that will produce in the pupil's life the desired attitude or skill.

Standards for maps—A map is in essence the representation of a portion or all of a given area. After a long period of experimentation and thoughtful study, the following standards for maps in the elementary- and secondary-school levels have been evolved and adopted by many teachers, supervisors, and administrators.

Characteristics of a good map which must also be simple, accurate, and clear are:

(1) Meaningful title: Corn Production in U. S. 1930
(2) Scale (actual or approximate): 500 miles=1 inch
(3) Key or legend: symbols either standard or fully explained
(4) Parallels and meridians indicated on margins or edges of sheet, except equator and other similar sun behavior lines: Tropic of Cancer, Tropic of Capricorn, Arctic Circle, and Antarctic Circle, which may be drawn lightly across sheet
(5) Source of data used on map: U. S. Department of Agriculture Yearbook, 1931
(6) Date, where advisable: 1930
(7) Coast lines, except in case of islands, continued to margin or edge of sheet.

Equipment for a typical school—Since the understanding of human behavior in any given place is closely related to the elements of the natural environment of that place be it climate, topography, water and mineral resources, soil, or some other "nature" element, the early needs for the elementary school are physical-political maps, not political maps.[1] They are basal materials for studying not only geography but also other phases of the curriculum, especially history.

Generally speaking, world maps are the first need for each school whether it is in an urban or a rural district. The minimum needs

[1] See: *Thirty-Second Yearbook, 1933,* National Society for the Study of Education, p. 398 and other parts of Chapter XXV. Also Chapters XV, XVI, XXII, XXIX, and XXX.

for initial learning purposes are two world wall maps: (1) a map showing physical regions, in colors, according to the color legend or key for the International Map of the World and superimposed thereon the major political boundaries by means of standard line symbols; and (2) a map showing predominant land uses thruout the world.

Great care must be exercised in the selection of a projection for world maps. The Mercator projection, tho useful to navigators, is discouraged for public school use. This projection badly distorts continental and ocean shapes (hence areas and distances) and enormously expands areas in polar latitudes. Also, the poles themselves cannot be represented on the Mercator projection. Equal area projections are urged; for example, the interrupted homolosine and homolographic world projections by Dr. J. Paul Goode. Less accurate, but fairly satisfactory ones are the van der Grinten, Boggs, and Molleveide world projections.

In a typical schoolroom, maps on a sufficient scale should be available for such areas as the pupils are studying. They are needed for individual study and socialized presentation, hence should be constantly available in that room. These tools are usually "continent maps" selected to fit the curriculum of each given grade and should deal with both physical and political aspects as suggested in the case of the world maps. For example, a fifth-grade classroom would have physical-political maps of North America and probably one of the United States; a sixth-grade room, Europe and any other continent areas of which parts are to be studied by the pupils of that grade. In addition to these continent maps, world maps should be available when the need arises. For the history learnings, the political boundaries shown on a map should be accurate for the historical period under consideration. If these human items are superimposed on a physical base map, maps are produced that will aid the pupils in understanding better the human behaviors of those historical periods.

Wall and desk *outline* maps, when used during the study work, have distinct value as media for helping the pupils to acquire more accurate concepts of: (1) the localization of individual facts both of the nature phase, or natural layout, of a given region and of the human use, or cultural layout, of the region, and (2) the existence of a relationship between one or more of these human (cultural) features, activities, or conditions and one or more items in nature in a given region.

Since testing of concepts is quite as essential for achievement as is initial development of concepts, it is necessary that the minimum equipment should include wall and desk base or outline maps which are to be used purely for testing purposes. This activity is particu-

larly functional in geographical education. Again, a world wall map, frequently referred to as a blackboard outline map, is a real essential for testing as well as initial learning purposes. Then some continent maps; for example, North America for fifth grade, Europe for sixth grade, and so on according to the specific curriculums of the given grades in the school. The same blackboard map can be used for any subject provided the amount of detail appearing thereon permanently is limited. However, care must again be exercised in selecting a world map. In no case should a Mercator projection be used.

As with maps, so with globes, both physical and political items should be shown. A sixteen-inch globe with not too much detail is recommended. Only such items as are suited to the elementary-school level should be printed thereon. The color schemes for water depths and land elevations adopted for the International Map of the World and the generally accepted line symbols for such items as rivers, coast lines, and political boundaries should appear. If grades seven and eight are included in a given school, a second globe showing more detail and having a movable meridian will be found useful.

In the case of charts, proportion is particularly essential. Charts should be accurate in the facts presented and also should conform with principles of structure in the matter of English and art. Charts should be definitely distinguished from cartoons and other distorted visual material.

In this connection, caution is urged in the use of " picture maps " and of books containing picture maps. A map expresses space. This space can and should be accurately represented, or at least, proportionately drawn. Also, it is highly essential that people living in our complex civilization so largely dealing with areas, should acquire during their school days a keen sense of space. In picture maps, to which some pupils are being exposed in the elementary school, the picture appears on a scale much larger than the scale of the map. Thus, the picture covers far more area, or territory, as it is printed on the map than is the actual situation. Hence the pupils acquire inaccurate, disproportionate, and incomplete concepts of that area. Also, the very attractiveness of these picture maps deepens the incorrect image which the pupil acquires, and great difficulty is encountered in having the pupil correct that error. If a teacher is impelled to use such picture maps because they are " so lovely and attractive," one urges its use *after* correct concepts of the area have been acquired by the pupil thru the use of carefully selected pictures and words and truthful maps. Even then, the picture map should be used as a test medium and the pupils required to state the omissions and other errors found on the map.

Materials for making graphs, both desk and wall sizes, as well as a slated graph chart are recommended. Many teachers, supervisors, and administrators have contributed in formulating the characteristics of a good graph, for example:

(1) Meaningful title: Grain crops of the World, 1930
(2) Key or legend: 1 block = 500,000,000 bushels
(3) Scale: vertical and horizontal
(4) Source of data used in the graph: World Almanac, 1934
(5) Date, where advisable: 1930
(6) A common base line or point used as starting place for each item indicated.

Gradations in maps, globes, and charts—Scientific investigations have shown the value of gradations in learnings, hence it is strongly urged that there be a definite recognition of gradation in complexity of map, globe, and chart tools to which a pupil is exposed as he progresses in his school career. A globe that is functional in the seventh and eighth grades is not the preferred one for the lower grades. Since the earth's surface is not smooth, and since the younger pupils are more conscious of variations in land forms than they are in political boundaries, pupils of the lower grades should have opportunity to use a simple globe that shows, by means of color, the variation of elevations in land and depths in the oceans, rather than a globe that shows in colors the extent of political divisions. Furthermore, a globe that shows elevations and depths by means of color may have political boundaries also indicated thereon and yet not be too complicated for use in the lower grades.

Organization and storage—Careful organization is necessary in each school building to ensure effective use and proper storage for maps, globes, and charts. The scheme depends in a measure on the size of the school. In general, a dry, and so far as possible dustless, closet or room, which need not have windows, will be satisfactory. Racks functionally labeled by: (1) title and nature of the map and in some instances, to show gradation in complexity of the maps, (2) grade or grades in which the map or chart is especially useful according to the school's curriculum. If the storage space is insufficient for racks, a screw of a thickness appropriate to the thickness of the wood used in the wood rods of the map-mounting can be inserted at one end of one of the rods of each map and the map can be suspended by hooks from the under side of a shelf built across the closet or attached to hooks placed along the wall.

Maps rolled on wooden rods may be suspended horizontally with wall pegs under each end. Or the ends may be fitted in notches in strips of wood which have been mounted the proper distance apart on the walls or in cabinets. Others prefer to have small compartments

in cabinets into which the rolled map may be inserted. In all of these arrangements labels should be placed as aids in locating the desired maps and in keeping the set in systematic order.

Flat charts or maps should be filed preferably in flat drawers of appropriate size. Where these are not possible, the materials are hung in a special cabinet to protect them from dust.

It will be found worthwhile to cover globes during the vacations. Dust can readily obliterate an essential item printed on a globe. Of course, the globe should not be covered during school time.

Collections of materials really require a "curator" and a system of recording the loans of material, so that any article may be traced speedily at any time. One or more pupils of the highest grade in the school who have mechanical aptitudes often enjoy the opportunity of keeping maps, charts and, in fact, other learning media in good condition. Some janitors take pride in helping to maintain these materials in good repair and in working organization. When a map has been torn and insufficient space remains for remounting it, it is wise to consult the company which published the map for specific instructions.

Equipment made by pupils—There is character education value in encouraging each class of pupils to contribute at least one worthwhile map or chart that will increase the permanent equipment of the school. The map, graph, or chart should conform with the standards stated above and should deploy items of real importance. A map, or relief model, made by an individual child who evidences special aptitude may have true social worth for the entire school.

Individual productions of maps and charts must, however, be carefully evaluated before being accepted for the school collection. Care should be exercised to distinguish between: (1) maps made by pupils as means (a) for learning initially a new concept, (b) for checking ideas that have also been expressed in words, pictures, or statistics, or (c) for testing the pupil's accuracy of a given concept; and (2) maps made by a group of pupils for more permanent and wider social use by subsequent classes in the school.

In conclusion, visual aids should be carefully graded on the basis of the educational levels. Adequately prepared and experienced teachers and supervisors in education are the only persons competent to *select* and *use* materials that will develop in our young and older citizens a functional geographic thinking and feeling so outstandingly demanded in presentday living—vocational and avocational.

USING MAPS WITH YOUNG PUPILS

NANNILEE SAUNDERS
Principal, Judson School, Greenville, South Carolina

MAPS ARE as essential to good teaching as are books themselves. The little child six years old begins the idea of direction as it applies to his own position. Later he gets the idea of the location and position of other things not present to the senses but near at hand. From this beginning, the individual learns to interpret various forms of maps which represent realms that are unfamiliar. So maps are nothing more than tools for picturing concretely in one's mind physical or political areas, local or distant, which cannot possibly be seen clearly otherwise.

The map is one of the few things used thru school that is an essential to man's intelligent interpretation of current happenings. The road map of the present day is a great educative factor in American life. The average eight- or ten-year-old child delights to use a map as he makes a trip of a few hundred miles. The American good road with the automobile and much traveling of the average man have increased the importance of the school giving a clear understanding of maps and their use. It has indeed made this a necessity if we are thinking of real life in school.

A school without maps is a school failing to provide one of the most effective means for giving the student a definite conception of certain geographic facts backed by a reasoning knowledge of their significance. It fails to create in the best way an interest in man's existence which will make of the citizenship of tomorrow efficient contributors to world betterment.

Maps for first- and second-grade levels of development—Many of us have not had the vision to see what a map is like on the first- and second-grade level. Actually we didn't know that there was such a thing. Maybe the first experience bearing in the direction of maps for the beginner in school is when he helps to plan the arrangement of the furniture in his own room. He sees that the tables have a definite relation to each other, that each chair has its place, and that the circle in the room has a definite location.

His first school activity has to do with things within his experience. He learns the best way to go home from school (our children do because luckily their mothers can't come for them in automobiles). He learns what traffic rules he must obey. He learns the streets where he must be careful. He takes a trip in the vicinity of the school to see someone's pet squirrels. He visualizes the route taken and counts the blocks to see how far he had to go. He goes two blocks in one

direction and one block in another. A suggestion is offered to build a home in the room. The plan of this home is indeed a map.

A group decides to study about " ways to go places " and gets into a transportation unit. Because they have not ridden on a train they decide to go to Easley (15 miles away). They see where Easley is in relation to Greenville and where the station is in relation to the school because they must take the train at the station. A crude representation of the trip is made. Regardless of crudeness it means development for the children.

A farm is built. The children decide to have a farmer and his family live on the farm. The farmer and his wife plan their home,

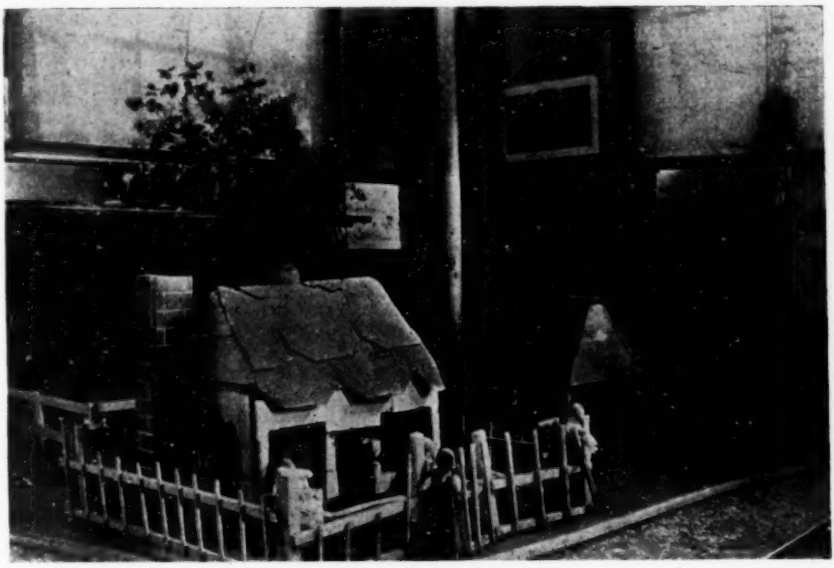


FIGURE 1—A Farm is Built.

its location, the location of barn, silo, garage, and well. A plan is made, the buildings are finished and arranged according to plan. The road in front runs north and south. The farmer goes south to reach Greenville with his vegetables and chickens for sale or with his cotton, perhaps. Direction is introduced. Where is south from the school? One direction is established. North is opposite. Another direction is found. Figure 1 illustrates the farm unit.

The second grade plans a city. They go on an excursion thru the city locating the parks, important buildings, railroad station, and residential and industrial sections. They decide on their return what buildings are needed. A trip is made to a lumber yard in the com-

munity to get materials. Distances and routes are discussed. The buildings are finished. The city is laid off. The streets are named and marked E. and W., N. and S., from the main streets. Figure 2 illustrates this project.

The children begin to study the food supply of the people and workers in the city. The source of these is considered. They find that fresh vegetables in winter come from a warm region or a region south of us. Another and new meaning is given to directions. Relation of places and sections to us is found. So map interpretation continues.

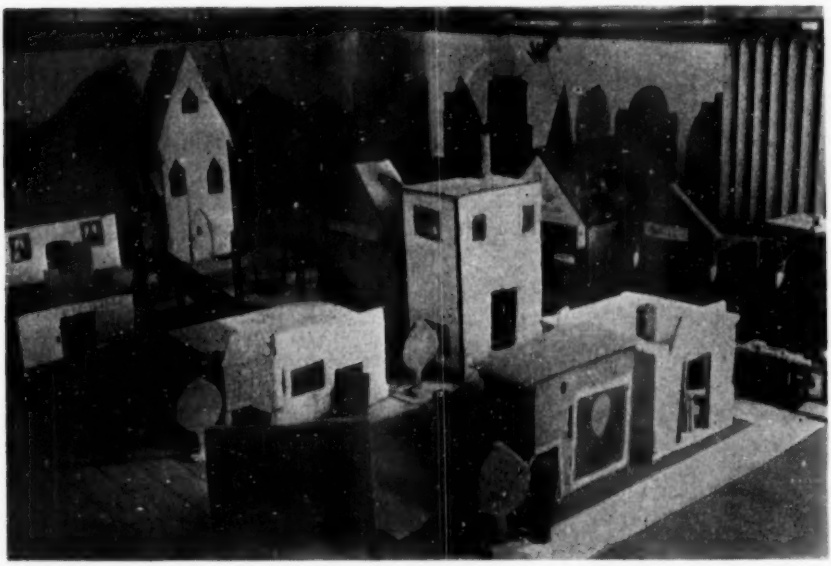


FIGURE 2—A City is Planned.

In this period, then, we say that the following fundamentals of map study come. The children learn that:

(1) Every home, farm, and city has a definite plan or pattern.
(2) Home and school are found in definite relation to each other.
(3) By using standard directions, places may be located.
(4) Spatial relations can be seen in one's mind; that is, one can imagine a distant place with eyes closed.
(5) All directions may be determined approximately from the sunrise or sunset.
(6) One city is in a definite direction from another.

Maps for the third-grade level of development—In the third grade the formal map is introduced to the child. He is interested in peoples. He studies the Eskimo of the Far North, the people of hot lands, the Dutch, the Japanese, the Swiss, the Chinese, and the Arabs.

The child learns that there are zones on the earth. He sees the globe. He learns the shape of the earth. He locates the poles. He sees the equator. He finds the continents in different hemispheres. He locates Holland or Japan. He studies India. The teacher introduces an outline map of North America so that he can see where the plains Indians and Southwest Indians lived. A child brings in a piece of Mexican pottery. Mexico is located. One pupil asks about South Carolina Indians. South Carolina is located, drawn into the map, and Greenville is located.

In the child's mind he is now gradually getting an image of North America as a continent. He is getting the location of his own state and city on this continent. Perhaps a United States map is used for the Indian study or the United States is carefully outlined on North America so as to impress the child. A base map may be used to show kinds of homes used by Indians in different areas. Pictures of homes may be put on in these locations. Care must be taken to have accurate outlines so that children's first impressions are correct.

Someone brings a picture of an adobe house. After much study it is decided that one can be built. This is done and all of the surroundings are arranged to portray the life and activities of the Hopi Indians. This is a real picturization of such an Indian habitat. Another group decides to show the life of the tepee Indians by use of pictures. They decide on a western sunset background so that they can show the Indians' activities at sunset. They plan the north and south part of the picture. Both of these are most worthwhile from the map viewpoint.

So in the third-grade period the student finds that:

(1) There are zones around the earth.
(2) North is toward the North Pole.
(3) South is toward the South Pole.
(4) People in temperate zone are more energetic, ambitious, and progressive.
(5) Continents are large areas of land with definite boundaries.
(6) South Carolina is a part of southeastern United States.
(7) Maps are made to scale.
(8) A map pictures a large area which we cannot otherwise imagine.
(9) The earth is round.

Conclusion—Thus the work in the primary school in regard to maps is designed to develop in the child a clearer conception of areas not seen by the eye. He develops a spatial imagination. His experience reaches out from home to an understanding of larger areas. He has been made to feel that the printed map is a tool for his use. This tool serves as an interpreter of facts learned about people. Besides this, students learn that a map may be a means of self-expression—it may be made to depict certain conditions and facts about which the

pupil has learned. He may create a map to express his own ideas of a section. The maps which may be used for the first three grades have been briefly discussed in this article. All cannot be given, however, because the number is unlimited depending on the ingenuity of the teacher. The use of maps is something which is seen constantly in everyday life, even from the beginning of the child's first school or kindergarten experience.

PICTURE APPRECIATION in the school should help children thruout life to evaluate and enjoy fine examples of art. The fact that a youngster looks at some one picture, hears a description of it, is told a story about it, and reads something concerning the artist's life may lead him to appreciate the picture in question but will not help him much if he walks into a museum to see entirely different pictures.

Many teachers of picture study hesitate to teach the more technical elements of appreciation. Some consider such instruction impossible below the junior high school. It is the belief of the writers that even in the elementary school these factors in technic can be made the foundation for an appreciation of all good works of art. The technical elements are the common language of artists and can be made the common key to appreciation for all normal children. The results of this experiment seem in agreement with this belief.—Waymack, Eunice H. and Hendrickson, G., *Elementary School Journal*, December 1932, p. 276.

PUPIL-MADE MAPS

E. WINIFRED CRAWFORD
Director of Visual Education, Public Schools, Montclair, New Jersey

BEAUTIFUL old handmade maps have always been valued for their information and for their workmanship. Some of the sketched directions or maps of the early navigators and some of the very old elaborate maps which hang on the walls of geographical or historical societies or museums, indicate that for centuries many kinds of maps have been made by hand to express thought and to record research. The world, which today is a neighborhood in contrast with olden times, is talked about and written about in terms of maps.

This discussion will be limited to the possibilities of maps that pupils make. These maps may be of several types: those made by individuals, groups, classes, or the school; of several kinds: sketched, drawn, traced, constructed, or modeled; and for several uses: momentary illustration, prolonged study, or enjoyment.

PRINCIPLES UNDERLYING MAP MAKING

Maps which conform to the following principles will be of intrinsic value to the understanding and interpretation of the children's school work:

(1) *Fulfill a purpose*—From the teacher's angle the making of maps should give the pupils experiences not obtainable in any other way. From the pupils viewpoint map making may have one or more of several purposes:

(a) To tell a story, as is done by a pictorial record and map of Lindbergh's recent trip.
(b) To explain a truth, such as done in a map of the streets and traffic safeguards of the local school district.
(c) To record the results of research, such as the causes of the westward movement in the United States and the reasons for each overland route.
(d) To classify and to organize knowledge, such as the careful plotting of the route taken by migratory birds, the measurement of the distance traveled, and similar procedures which fill in the details of general knowledge.

The time taken to make maps should be commensurate with the values to be obtained. A particular map may be a rough sketch or an intricate piece of art. Both types have value as long as they are integral parts of the unit of work and utilized for clearly understood purposes.

(2) *Adapted to the ability of the pupils*—A single idea should be represented on each map, for too many items are apt to confuse both

the maker and the reader. The motor and artistic abilities of the pupils must also be considered in the preparation of maps. If the type of drawing or construction is too intricate for the grade level the pupils may be disappointed with the results.

(3) *True to thought*—It is desirable that children obtain correct impressions of shapes, areas, locations, and relationships when they look at maps. Maps of continents and the world need particular attention. Mercator's projection of the world on which Greenland appears almost as large as South America should never be used. For most continents Lambert's Azimuthal and for most countries the conic or polyconic projections will give the most accurate impressions. The interrupted homolographic projection for a world map is best for plotting such routes as the one now being taken by Admiral Byrd.

A pupil-made map should be correctly proportioned by having latitude, longitude, and altitude on the same scale. In pictorial maps it is often necessary for articles to be out of scale with the chart itself. Usually, everyone understands this exaggeration and the values far outweigh the objections. Insofar as possible, however, proportions should be maintained.

Proportion should be observed, too, in the scale used in constructing maps. If the children make a model or sketch of the local districts, distances should be clearly indicated and fully understood. The symbols and colors of the map should be planned so as to give correct and useful visual impressions.

(4) *True to art*—Arrangement of the spaces on the map requires careful thought. Since the physical features and directions of continents are fixed it is often necessary to include varying amounts of the surrounding land and water to get a balance effect. The name, scale of miles, legend, and points of the compass may also be used to make pleasing arrangements. The opportunity to judge what and where materials are to be placed is excellent training.

Margins should always be considered, for no map should be made without them. The side margins should be equal, the lower margin the widest, the upper margin narrower than the side margin if the map is in a horizontal rectangle, and the top margin should be wider than the side margin if the map is in a vertical rectangle. The top margin should equal the side margins if the map is in a square. On large maps a border to form a frame is effective but even then margins are needed within the border.

Maps should be lettered from left to right so all words read on horizontal planes unless there is a definite geographic reason for a different arrangement. Letters of the same size and style should

stand for things of equal value. Capital letters of the same size may represent the countries. Capitals and small letters of the same size may be used to indicate all cities. When this principle is followed in making maps, children will find reading of maps more meaningful.

The right use of color helps make maps artistic, attractive, and comprehensive. Legibility is important because a map is a visual story. Groups of lettering of equal value should be equally legible at any given distance away from the map.

SOME TECHNICS FOR PUPILS

Technics are important in making maps. When the children once become familiar with them they find great enjoyment in making many kinds of maps. Knowing the principles of how to make maps gives opportunity for experimentation and for using the maps to indicate many ideas.

Sketched maps—There are a few distinct technics to consider when the children make their own sketched, drawn, traced, constructed, or modeled maps. Chalk, crayon, or pencil may be used on the blackboard or on paper to sketch a rough map which will be discarded almost as soon as it has been sketched. A sketch of the area around the settlement of Jamestown makes clear some of the reasons for the hardships of the colony. Children should be encouraged to illustrate their work by means of these quickly and roughly sketched maps.

Drawn maps—Drawn maps differ from the sketched maps in that they need definite planning. The idea that the map is to represent and how the idea may be expressed by means of a map should be talked over and clearly understood. Little children may draw a map, perhaps of their school neighborhood, to help them understand map construction. These maps when drawn on large sheets of paper may include the streets, railways, schools, and houses. Guidance is needed in plotting out the map and in drawing it. Proper proportions and, with older children, a scale need to be understood. The commercial outline map may be used in many of the ways suggested for other maps. Older children enjoy using the shading, hachures, and crossed-line effects when making physiographic maps.

Traced maps—The enlarged traced map is very easily made from either a stereopticon map slide or a printed map. A pantograph is difficult for children to use and takes considerable time. After deciding on the desired size of the map—for any size may be projected—prepare the paper. Hang it on a smooth place on a wall so that the tracing may be done over a flat surface. Then focus the light of the

stereopticon projector on the paper so that the lighted area is a little larger than the size of the desired map. Place the map slide with the thumb mark in the upper right-hand corner in the stereopticon. Then bring to a keen focus the projected image of the map on the paper. Move the machine nearer the paper if a smaller map is desired, farther from the paper if a larger map is wanted, and up or down as needed. Each time the projector is moved the focus must be adjusted. Third- or fourth-grade children soon become accustomed to setting up a stereopticon machine for a desired size picture. A dark room is not necessary, pulling down the ordinary window shades will help, tho if a room faces north this may not be necessary.

The map is now ready to be traced with pencil. If a large map of the world or a continent about six by ten feet is being made perhaps six children can work at the same time tracing the outline, rivers, or whatever is desired. Caution should be taken, while the children are tracing the outline, not to jar the stereopticon or trip over the cord, because it is very difficult to reset the machine so that the image of the map coincides with the traced lines on the paper if the projector is jarred. When the children have finished tracing, carefully switch off the light, then examine the large map or the paper to see that everything desired has been traced. If not, turn on the light and finish the map. A dark crayon, India ink, or paint may be used over the lead pencil tracing to give a firm, clear cut outline to the map. Some teachers prefer to use chalk instead of pencil for the first tracing. Maps may be projected in this way on the blackboard, muslin, cardboard, or any other material that can be drawn upon.

If a commercial lantern slide of a desired area is not obtainable, a map may be traced on etched glass, clear glass, or cellophane.[1] Maps may be projected directly from a map in a book with the aid of an opaque projector. The same general principles of projection may be followed as those outlined for using the lantern slide. A dark or nearly dark room is needed for best results when an opaque projector is used.

When many small maps of the same outline are desired a duplicator is easy. A stencil may be made from a map by using a mimeoscope. Mimeographed maps are good substitutes for commercial outline maps.

Constructed maps—Children take considerable interest in the constructed map, that is, the map they can manipulate. One group constructed the streets and buildings of their immediate school neighborhood on the floor of the classroom. Excursions around the

[1] For an explanation of how to make slides see Chapter VI of this yearbook.

neighborhood and play in the living map enabled the children to draw a map of the school area, which they hung over the play map.

Children interested in science enjoy making electrical maps. The outline is made directly on a piece of beaver board according to any one of the several suggestions already given. This type of board will permit the easy boring of holes thru it for the electrical wiring. The science teacher will be glad to assist the children with wiring the map and connecting the battery if necessary.

Older children who have been using either the United States or state topographic maps enjoy constructing tag board maps which show altitude by means of contours. A definite physiographic feature such as the formation of natural levees along a stream and delta may be selected. Have two topographic sheets of the area, cut from one the small area to be used for the map, and keep the other for reference. The maps are made by tracing the contour lines. Have a piece of tag board on a board as a base. Draw on this the rectangle of the small section of the topographic map to be used. On the topographic map cut around the lowest contour. Place this cut-out map on a piece of tag board, trace around the contour line and cut out. The piece of tag board will be the exact shape of the outline of the lowest contour line on the map. Paste this on the baseboard to correspond exactly by the points of the compass with the same contour on the topographic map. Repeat this with next lowest contour. Not always will the contours be continuous. Proceed in the same way with every contour. A medium grade of tag board will make a twenty-foot contour almost in proper altitude proportion. The map should be kept under press during construction and afterwards until thoroly dried. Children will seldom make maps which require great height, in such a map a small brad may help hold the layers of tag board together. Proper legends should be attached and the map painted if desired.

Modeled map—The modeled map has the advantage of showing altitudes in relief. The scale is the most important factor to consider, for the altitude must be in proper ratio to the latitude and longitude distance to give an accurate impression. Maps of small areas will show the altitude on much more detail than maps of continents. Children have little need for making maps which use two scales.

Many different types of materials may be used, sand, clay, plasticene, paper pulp, salt, and flour. For the method to use in preparing these plastics consult any recent manual arts book. These materials except plasticene may be painted. Schools situated near

brooks, which have made sandy flood plains, will find children delight in modeling fairly large maps in the brook's flood plain. Manipulation when making maps gives the children a feeling for relief that they can get in no other way.

SOME USES OF PUPIL-MADE MAPS

Because of the aim of this discussion and because so many types of uses of pupil-made maps have been indicated in the illustrations of this article, this section will be limited to a brief statement regarding some individual, group, class, and school pupil-made maps.

Maps made by individuals in the class, for either group or class reports in units of work, or for indicating research, and filed in notebooks, are mostly used from the fourth grade upward. Figure 1 illustrates a map of Egypt, one of a series compiled by individuals to record their studies and investigations in ancient history.

A number of groups studying a unit of work on New Jersey used maps to illustrate their studies. Among the maps made were several on natural resources, others on industries, population, recreation, history, literature, and the arts. Each group was interested in the findings of the other groups, often sharing information or pictures with them. The culmination of the unit of work took the form of a play, each group contributing a scene and the summary of the study was the giving of the play at an assembly period.

A class making an intensive study of South America made a pictorial map of its imaginary trip around that continent. This map was in process of making during the entire time of the study. One result, of the study and selecting of pictures to illustrate their trip on the map, was the making of original sketches of the things they saw on their journeys. A marionette show, with background pictures they had painted, depicted their travelings in an animated way. Thus map work was an integral part of a larger unit and not a single study in itself. Figure 2 illustrates this point.

A school map that held the interest of the children during the remainder of the year was made for Book Week. A fifth-grade class, in their social studies and art work, made a map of the world, about nine by fifteen feet, which was hung in the hall. The class invited the other classes of the school to paste on the various countries of the world the names of books read that fall, whose stories were about peoples in the different countries. The interest in the geographical side of literature was greatly increased and the map continued to be used after Book Week.

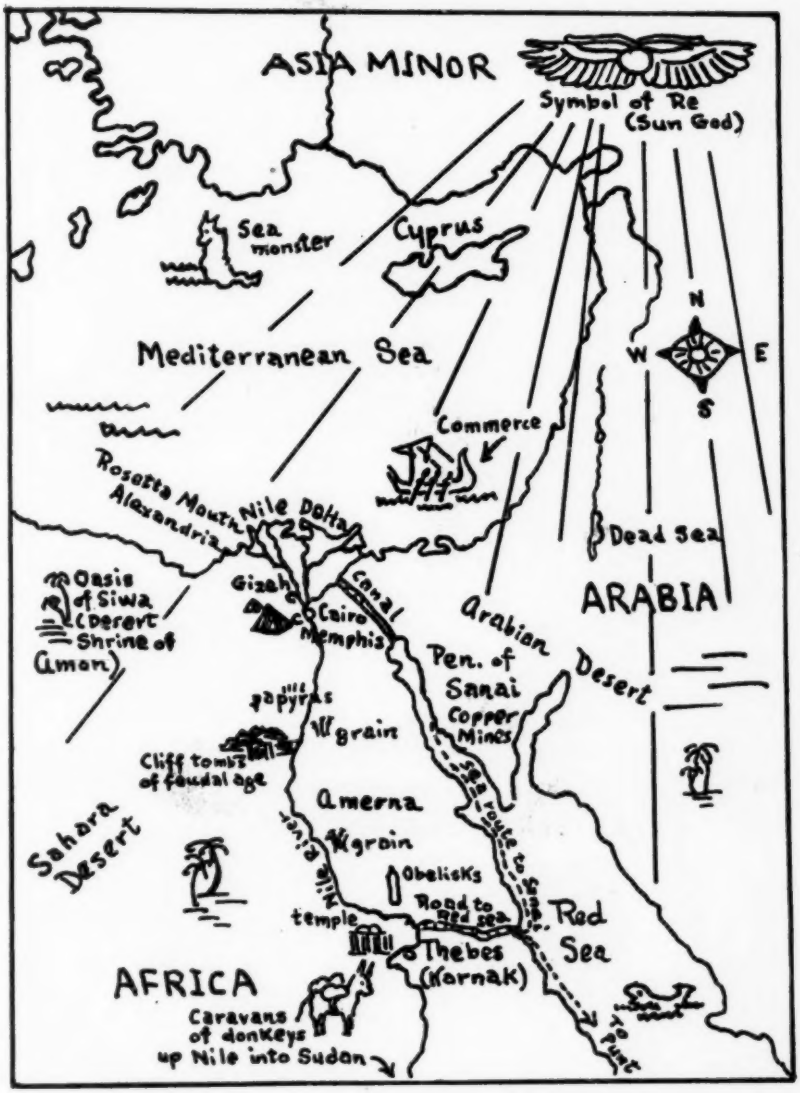


FIGURE 1—An Outline Map for Notebook Work.

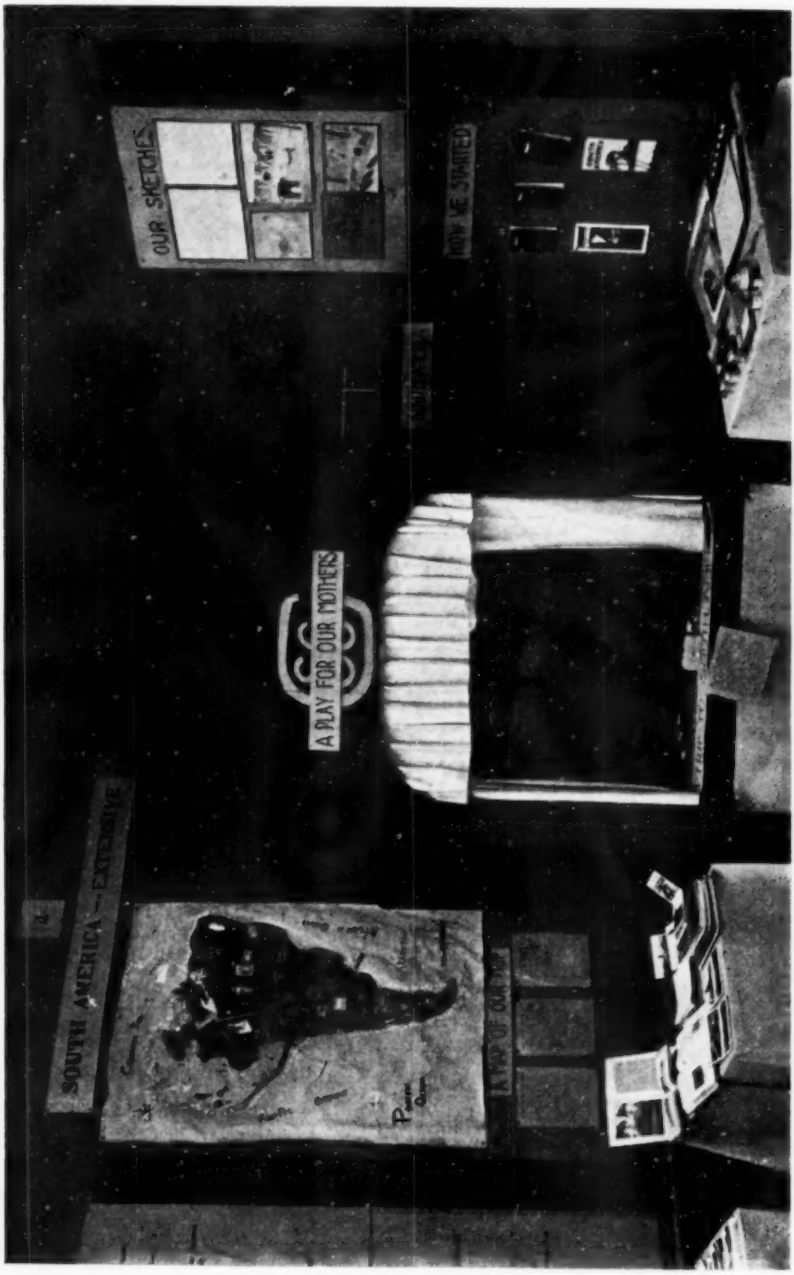


FIGURE 2—Maps as Integral Parts of Large Units.

The uses of pupil-made maps are many and varied. Maps are parts of units of work and not isolated things. When the purpose for which the map has been made has been accomplished, either give the map to the child or discard it. A beautiful map may be enjoyed, if appropriately hung, for a time after the unit of work has been finished. Care should be taken to keep the map in proper condition. It may be shared with another group or used at a teachers' gathering.

SOME STANDARDS FOR EVALUATING PUPIL-MADE MAPS

A casual glance at a pupil-made map tells very little of its worth. A map which quickly catches the eye may not be nearly as educational as a map which is less pronounced. A few standards to use as a measuring rod when evaluating the maps children make may be helpful.

(1) Have the children grown in their knowledge, appreciations, and understandings thru making the map as one part of a study?
(2) Can the children interpret the meanings indicated by the map and not tell just the obvious?
(3) Does the map
  (a) Have educational value commensurate with the time spent in making it?
  (b) Make clear its purpose to the observer?
  (c) Indicate that the materials used have been evaluated?
  (d) Speak the truth?
  (e) Give an artistic appearance?
  (f) Indicate that efficient technics have been used?

Conclusion—Today a map is a recognized way of expression the same as a paragraph or a picture. Oral directions may even be called a verbal map. Thru the easy access to maps, we are becoming a map-minded people. The maps that the children make themselves in school under the guidance of their teachers, besides being of intrinsic worth to their studies, have a lasting life meaning for the children. The work goes beyond that of the school into the realm of appreciation and spiritual values for our youth.

FIGURE 2—Maps as Integral Parts of Large Units.

AN EVALUATION OF GRAPHIC INSTRUCTION MATERIALS

R. A. HARPER
Teacher, New Trier Township High School, Winnetka, Illinois
and
HENRY J. OTTO
Assistant Professor of Education, Northwestern University, Evanston, Illinois

THE EXPERIMENT reported herewith attempted to measure, by objective means, the value of instruction in the interpretation of simple graphs. The pupils were taught to interpret graphs which directly supplemented one unit of geography in the fifth grade and one unit in the sixth grade. Tests were given before the unit was started and at the completion of the unit to measure the pupils' general knowledge of geography, their knowledge of the geography studied in the experimental unit, and their ability to interpret graphic materials. The final conclusions indicate some of the values which might be expected to result from the extensive use of supplementary graphic materials in instruction in the fifth and sixth grades.

The use of graphic materials in schools—The use of graphs as one phase of visual instruction has developed recently in magazines, newspapers, and books. In advertising, graphs are frequently used to illustrate some point. With graphs playing an important rôle outside the school with apparent success, the scientific evaluation of their use inside the school is important.

It is essential that we know the nature and extent of any values which may be expected to accrue from the use of graphs in the schoolroom. Further, we must know the way in which children react to graphs, their interest in them, and the ease with which they use them. We must also know what types of information the graphs will give the children.

A graph may be defined as a diagram representing the successive values of a changing quantity, or the relative values of two or more like quantities. There are several different kinds of graphs. The simplest is the pictogram. Bars, lines, and circles are also used in expressing relationships.[1]

The various studies which have been carried on involving the use of graphs have been interested chiefly in the grade placement of these materials.[2] Three generalizations can be drawn from these experi-

[1] For a technical discussion of graphic methods consult: Williams, J. Harold. *Graphic Methods in Education.* Boston: Houghton Mifflin Co. 1924. 319 p.

[2] Consult particularly: Dorris, Anna V. *Visual Instruction in the Public Schools.* Boston: Ginn and Co., 1928. 481 p.; Mathews, C. O. *The Grade Placement of Curriculum Materials in the Social Studies.* Contributions to Education, No. 241. New York: Teachers College, Columbia University, 1926. 152 p.; Rathmann, Carl G. *Visual Education in the Saint Louis School Museum.* U. S. Dept. of the Interior, Bureau of Education, Bulletin, 1924, No. 39. Washington, D. C.:

ments. Children at the fifth-grade level and above can interpret graphic materials when they are submitted in a simple form. Graphic materials should be constructed to meet the abilities in the tool subjects of the pupils who are going to use them. Drill or special instruction increases markedly the proficiency with which these materials are used. The writers have suggested incidentally that graphic materials can be of considerable value as teaching devices for the presentation of factual material. But the point of emphasis of the studies has been on the grade placement of the materials, rather than upon the nature and extent of the values arising from their use.

It is highly important therefore that some scientific study show the value of the use of these materials, and the nature of the use which can be made of them. To know that children can understand and use graphs is not sufficient; we must know whether the graphs have educational value.

Character of the experiment—In order to show the nature and extent of the values which might accrue from specific instruction in the interpretation of graphic materials, an experiment was carried on in the public schools of Wilmette, Illinois, during February and March of 1933. Four separate experiments were carried out involving the teaching of geography in the fifth and sixth grades over a six weeks' period. Three of the experiments had two control groups and one experimental group. One experiment had one control and one experimental group. A total of 365 pupils were involved in the experiment.

The control and experimental groups were picked on the basis of median intelligence scores. In no case was there a significant difference in the median scores between the groups in any one experiment.

During the experiment in the fifth grade, the pupils studied a unit on the geography of southeastern United States. The control groups covered this material in the usual manner, including reading and study of the textbook, class discussions, outside reading, special reports, and projects. The experimental groups used the same content and methods of study with the exception of attention given to eighteen supplementary graphs. Each graph related directly to the discussion in the text. The graphs were mimeographed so that each

Government Printing Office, 1924. 36 p.; Sister M. Callista. *Visualizing and Vitalizing the Content of Geography.* Educational Research Bulletin, No. 10. Washington, D. C.: Catholic University of America, 1928. 26 p.; Thomas, Katheryne Colvin. "The Ability of Children to Interpret Graphs." *The Teaching of Geography.* National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1933. p. 492-94; Thorp, Mary Tucker. "Studies of the Ability of Pupils in Grades Four to Eight to Use Geographic Tools." *The Teaching of Geography.* National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1933. p. 494-506; and Weber, Joseph J. *Comparative Effectiveness of Some Visual Aids in Seventh Grade Instruction.* Chicago: The Educational Screen, Inc., 1922. 131 p.

pupil could receive one copy of each. The pupils were given the graphs when they would be of most use (as judged by the teacher) in emphasizing the material in the text. Usually the graph was distributed after the pupils had read and discussed the section to which the diagram related. The graphs were used to present the material from a different angle and to serve often as a review and a summary of the material. Each graph was discussed rather thoroly at the time it was given to the children.

Each child kept in his notebook the graphs which he received. Often the pupils colored the charts with crayons. Thus the different parts of the graph were made to stand out more vividly and the children were enabled to see better the relations expressed. This procedure made the work more interesting. Each diagram had a few questions written below it. The children answered these on the sheet and made other comments concerning facts which the graph showed them.

The sixth-grade experimental unit covered the geography of Germany. In the experimental group a supplementary set of twelve graphs was used in the same manner as were the graphs in the fifth grade. The materials used in the sixth grade were a little more complicated than those used in the fifth grade. Each grade received graphs of the three types: bar, line, and circle.

The outcomes of instruction were measured by three sets of tests, and by other less objective means. Growth in the knowledge of geography was measured by two tests; namely, *The New Stanford Geography Test,* and a curriculum test prepared locally. The curriculum tests used in the experiment were developed directly from the textbooks in use. Each test contained one hundred objective factual questions. The questions covered very closely the subjectmatter as it was discussed in the text. It was necessary to use factual questions of this type as this was the only knowledge which would be common to all groups. While the graphs used in the experiment followed the text closely they did present new facts and relations which the text did not discuss. The curriculum test did not measure the acquisition of these new facts except insofar as the graphs enabled the experimental group better to master the information presented in the text.

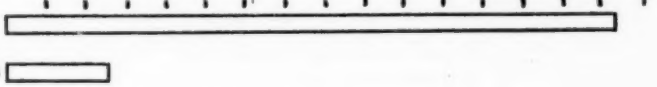
A special test of six graphs was developed to measure the growth in the ability to interpret graphic materials. The test included the three different types, bar, line, and circle, which were used in the supplementary materials. (See Figure 1.) The questions asked concerning the graphs were of the completion type. In some cases the choice of two possible answers was suggested; *i. e.,* more or less.

Name_____ Date_____
first name last name

Grade_____ School_____ Teacher_____

This is a test to see how well you can understand graphs. Here are two examples. Study how the first question is answered, then see if you can answer the second one correctly.

SIZE OF NORTH SHORE TOWNS IN THOUSAND OF PEOPLE



1. How many thousand people live in Kenilworth? 2½

The correct answer is of course 2½. This is shown by the length of the bar after the name Kenilworth. You see that it reaches halfway between two and three. Therefore the answer is 2½. Now try to answer the second question.

2. Which town is larger, Kenilworth or Wilmette? _____

Now here is another kind of a graph. Study this one the same way you did the first one.

DISTRIBUTION OF POPULATION IN THE UNITED STATES IN 1930

1. Where did more people live in 1930, in the country (rural) or in the cities (urban)? Urban

The answer is of course Urban because that is the largest part of the circle? Now see if you can answer the second question.

2. Where did less than half of the people live in 1930? _____

The questions on the following pages are very much like these. Answer them as best you can but do not spend too long on any one question. Try to answer all the questions. Do not ask any questions unless you do not know the meaning of a word.

DO NOT BEGIN UNTIL YOU ARE TOLD TO DO SO.

FIGURE 1—First Page of Test To Measure Ability To Interpret Graphic Materials.

In all, fifty answers were possible. The same test was given in both the fifth and sixth grades.

There were two general types of information called for in the questions in the graph test. The first was the relative type of information. For example, a line graph showing the amount of rainfall per month in Iowa was used. Two questions of the relative type asked were: "What month had the most rainfall?" and "What month had the least rainfall?" Another type of information asked for was the concrete or statistical type. For the same graph, examples of this type are "How many inches of rainfall were there in September?" and "How much more rainfall was there in July than in April?" The difference in the manner in which these two types of questions were handled will be discussed later.

Pretests and final tests of the three different types used were given to all groups.[3] The pretests were given just before the unit was completed. In the standardized geography test Form V was used as the pretest and Form W as the final test. In the curriculum and graph tests the same form was used before and after the experimental period.

A record was kept of the time required to teach the unit in the various groups in order to see if the additional materials required more time to teach, or if there was any economy of time due to its use.

The interest of the pupils in this type of material is important. It was studied thru the observation of the teachers. Any change of interest in geography or in other school subjects due to the use of the graphic materials would be important. Evidence of this change will be reported.

Results of the study—A summary of the results of the three sets of tests is given in Figure 2. This figure shows the increase of median scores of each group on the three different tests.

With the single exception of one group on the pretest, all median scores of the standardized geography test were above the norms for the respective grades as given by the makers of the test. These grade norms are expressed in tenths of a year so it is possible to compute the increase that normally should take place between the giving of the pretest and the final test. The normal increase for the fifth grade during the time of the experiment was two points and for the sixth grade one point. Referring to Figure 2, it is found that there are three groups which failed to make this increase. All other groups increased more than the normal amount.

[3] Copies of the informal tests used and of the supplementary graphic materials used may be secured from R. A. Harper, Wilmette, Illinois.

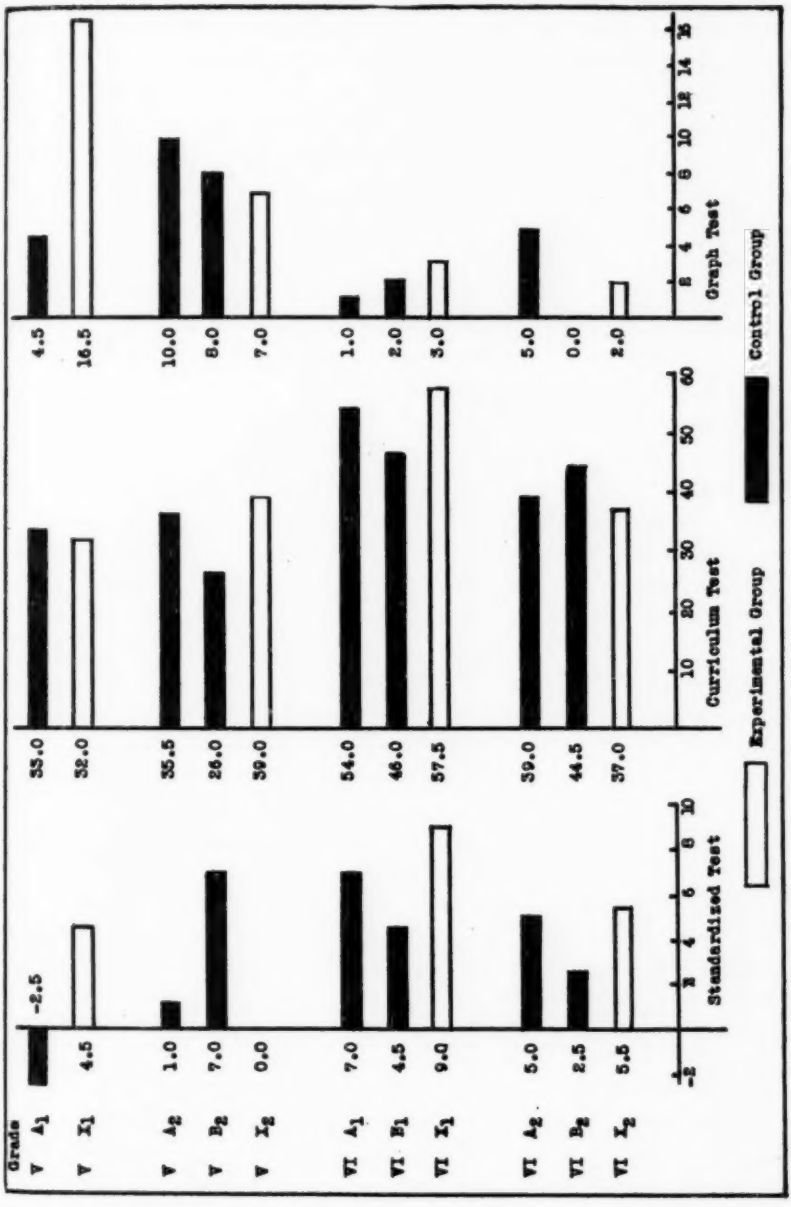


FIGURE 2—Increase of Median Scores on Final Test over Median Scores on Pretest.

The significance of these scores for the purpose of this experiment is not in the increase but in the difference in increase between the control and experimental groups. It is found that three of the experimental groups increased more than did their respective control groups, while one experimental group did not increase at all. When the probable errors of the median scores are taken into consideration, however, it is found that none of the differences in increase is statistically significant. The differences indicate a very slight trend in favor of the experimental groups but this cannot be taken as conclusive evidence.

As should be expected, all groups made significant increases on the curriculum test. These increases are also shown in Figure 2. Here it is the difference in growth between the control and experimental groups that would be of significance to the experiment. It is found that two experimental groups increased slightly more than did their respective control groups, one experimental group increased about the same amount as did its control group, and the other experimental group increased less than did its control group.

Thus the curriculum test gives no conclusive evidence as to the value of the use of graphs as supplementary materials. The results are in no case of positive or negative statistical significance altho there is slight evidence that the experimental groups increased the most. As measured by this test there is no evidence that the supplementary materials were highly valuable, nor is there any evidence that they distract from the normal learning procedures.

As has been stated before, the curriculum test measured only the factual knowledge presented in the text. The graphs may have presented additional geographic knowledge to the experimental groups which the control groups did not receive. If this additional knowledge was present, it was not measured by the curriculum test.

Pupils acquire knowledge thru a large group of factors, of which the graph is only one. The text, pictures, maps, drawings, extra readings, special reports, and class discussions, all should contribute something to the sum total of knowledge. If the graph added a little to this, or if the time spent in its use was wasted, the implements used to measure the change were too crude or the change too small to be indicated.

The results of all the pretests in the ability to interpret graphic materials showed a rather good comprehension of these materials in both the fifth and sixth grade. Out of a possible score of fifty the median scores in the fifth grade ranged from twenty-five to thirty-three, and in the sixth grade the median scores ranged from thirty-

five to forty-one. The results of this pretest are similar to those secured by other experimenters in this work and emphasize again the fact that children who have not had any special work or study in the use of graphs can interpret them rather well when they are constructed to meet the abilities of the pupils in the tool subjects.

The effect of the supplementary material on the ability of the children to interpret graphs is shown by the increase of median scores on the final test over the pretest. These increases are shown in Figure 2. It is seen from the figure that while one experimental group did improve significantly more than did the control group, in three experiments the control groups increased as much or more than did the experimental group. It is clearly evident that pupils in three experiments did not improve noticeably in their ability to interpret graphs because of the supplementary materials, while one group did increase a great deal. The median score on the final test for this latter group was forty-eight out of a possible fifty. It thus appears that improvement is possible.

The cause for this difference in improvement for the one group lies in the method used in presenting and discussing the graphs. Two types of information can be obtained from graphs, the relative or comparative type and the concrete or statistical type. The one group which improved so much was given considerable drill in the use of the scale to obtain statistical facts. As twenty of the fifty questions on the graph test were of the statistical type the pupils who had received this special instruction made better scores than did those pupils who had not received such instruction.

All of the experimental groups received training in the use of the graphs to obtain relative information. However, this ability is already rather highly developed and did not improve a great deal during the experimental period. The responses of a control group on the final test were analyzed and it was found that while 84 percent of all the questions were answered correctly, 90 percent of the relative type were correctly answered and only 72 percent of the statistical questions were answered correctly.

The implication is that the pupils have the ability to draw generalizations from graphs, such as the most important and the least important, by the time they reach the fifth and sixth grade. This ability has developed with very little training on the part of the school and is rather well developed by this time as additional use of it does not produce great improvement.

The ability to draw statistical information from graphs has not developed by the time the pupils reach the fifth and sixth grades.

This ability must be developed thru specific instruction, as it is apparent from this experiment that the ability does not develop from incidental use and association with graphs.

The high interest of pupils in the use of graphs was indicated in all the experiments. The pupils enjoyed doing the test both times regardless of whether they had had the supplementary material or not. The experimental groups were also quite enthusiastic concerning the supplementary material. Two of the experimental groups became interested in collecting graphs which were printed in magazines and newspapers. These they pasted in their notebooks. Other children made graphs of their own as special projects.

One of the graphs in each set given to the pupils was incomplete. The necessary figures and directions for finishing it were given and the pupils completed the graph. They found this very interesting and requested that they be allowed to make others. This took a good deal of time, however, and only one graph was presented in this manner.

This interest in graphs carried over to the study of geography. The teachers reported that two experimental groups which had been noticeably lacking in interest before the experiment started improved until they equaled or surpassed the respective control group in interest. There was no evidence that this interest carried over to any of the other school subjects.

The average time spent in presenting each of the graphs was not over ten minutes. Some of the first graphs required more explanation than did the latter ones, which could be presented more rapidly because the pupils had become familiar with this type of material.

The groups which received the supplementary graphic material did not spend any more time on the experimental unit than did the control groups. The time spent in discussing the graphs was made up by spending less time in other discussions or review.

Conclusions—The results of this study seem to indicate that the graph presents a different kind of information than is generally presented in the textbooks in geography. The texts used in this study seldom discussed the relative importance of various factors, the type of information which the graph presents.

When in the course of geography study it is found desirable to present this type of comparative information, it would seem that the graph is the best median to use. Children in the fifth and sixth grades can derive this type of information from the graphs readily and are quite as much interested in graphs as they are in pictures or other

types of visual materials. Very little time need be spent in instruction in the use of graphs.

The statistical type of information is of less value to geography. The use of the graph to secure statistical information perhaps belongs in the arithmetic course. If accurate figures are necessary in geography they may best be presented in a table of figures.

The graph is a valuable form of visual presentation for certain types of information. Its value to a course in geography, or to any other course in which it is used, will depend on the importance of the facts which it presents. This study has shown that relative or comparative facts can be presented to the children by means of the graph in a form which is economical in the time required for its discussion, economical in the space required, considering the number of facts presented, and economical in its cost. Beyond this, the children are as interested in graphs as they are in pictures or in other forms of visual instruction.

Altho the results of this experiment do not show distinctive educational contributions accruing to the experimental groups because of supplementary instruction in the interpretation of graphs, it must be remembered that the results at least point in the direction of increased achievement for the experimental groups and that the attitudes of teachers and pupils were distinctly in favor of the use of graphs. Perhaps a repetition of the experiment with more carefully controlled conditions and more selective measures will reveal such advantages as may exist. Also, one must not condemn without further research the value of graphs as an agency for education. The present study did not compare children who had had no experience with graphs with children who had learned to interpret graphs; it was rather a comparison of two groups, both of which had previously had experiences with graphs, but only one of which was given intensive supplementary instruction.

NOTHING WOULD BE MORE HELPFUL to the Department than reports on how principals use these yearbooks. What about them do you find desirable and helpful? What would you change if you were editing them?—Kline, Aaron, see p. 118 of this yearbook.

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CHAPTER IV

OBJECT MATERIALS

EDITORIAL COMMENT

THE DESIRE of humans to handle and to look at objects develops at an early age. Gradually the ability of the young child expands until he is able to show an interest in a number of objects. Gesell recently revealed this increasing interest in things by a series of motion pictures taken of a young baby. At a few weeks of age the baby showed an interest only in a single cube even tho other cubes were within reach. A few weeks later the child reached for and played with several cubes. Still later he picked up all of the cubes within reach, piled them on top of one another, and otherwise manipulated them in somewhat systematic fashion.

The contributors to the present chapter deal with the use of object materials on a high instructional level. One article indicates the possibility of cooperation between public museums and public schools. Another describes the functions and activities of a central museum within a school system. Several articles tell how the pupils may mount specimens and prepare exhibits. Another contributor reminds us of the possibilities of the many experiences to be had by the primary child simply with blocks.

As in the case of all of the devices discussed in this yearbook the value of objects depends almost wholly on the extent to which they are made integral parts of learning situations. Every teacher is aware of the waste involved in literally dragging children thru a welter of " things." It is essential first that the displays should be so arranged and systematized that inquiring minds may find quickly interesting materials. Second, the pupil must be helped to prepare himself for what he is to see. Then he must be guided thru the exhibit in terms of his needs, interests, and abilities. Finally, there should be some evaluation of the whole process to discover the need for further experiences and the possibility of improving the whole procedure.

What of the educational possibilities of collections made by the pupils themselves? Almost every child develops at some time an intense desire to collect stamps, stones, flowers, butterflies, bottles, and even bugs. How can these interests be linked with instruction?

For those who have other interests in the general field the list of references at the end of the chapter should prove most interesting.—*Editorial Committee.*

AID FROM MUSEUMS IN ELEMENTARY TEACHING

LAURENCE VAIL COLEMAN
Director, American Association of Museums, Smithsonian Institution, Washington, D. C.

BETWEEN SCHOOL AND MUSEUM there is a natural affinity springing from the fact that objects—the materials with which museums deal—are useful in teaching. As a consequence, cooperative relationships between schools and museums have grown up and are now well established in all but a very few of the larger cities and in most of the smaller places where museums are to be found.

Two major types of teaching procedure are: (1) instruction from exhibits at the museum, and (2) use of objects in the classroom. These two branches are as separate in purpose as they are distinct in character. When a class visits a museum for instruction, the children are taken on an intellectual or emotional exploration and they have a chance to broaden their experience beyond the horizon of the home, the classroom, and the street. They are plunged into radically new surroundings, and they emerge from the experience changed in the same way that adults are—or can be—changed by travel. On the other hand, when a museum lends visual material to a school, the children who use it have occasion to realize that their studies are not detached bookish exercises but real concerns which relate to the real world.

These two objectives—the excursion into new experiences at the museum, and getting upon firmer ground in the school—have come clearly into view as the result of nearly two decades of trial and failure (and success) in many places. Methods need no longer be haphazard as they were in the beginning; they have been much refined already, and now they are gaining further in effectiveness as a result of a widespread interest in studying them experimentally. Such matters as preparing the class for its visit, conducting discussions and demonstrations at the museum, using illustrative material at the school, and follow-up in the classroom are now subjects of scientific analysis and scholarly report.

Technic of museum visits—In a museum study-room an instructor begins by leading the group in discussion of a few selected museum objects. This introduction to the topic of the day raises questions. The discussion is centered upon objects and is not just a detached talk with objects brought in to illustrate it. After a half-hour, the group moves to an appropriate exhibition hall and the children—having first been shown the lay of the land—are asked

questions that only independent observation will answer. The questions may be given to the children one at a time or in sets. They may be spoken by the teacher or handed out on sheets, but, in whatever form, the work involves independent inquiry, and it has the advantages of a quest by actual motion, and a communication of findings partly in writing and partly by speech and gesture in reporting to the leader. This combination of a discussion and a search—simple and uncalculated as it may appear—embodies the fundamentals of good instruction. It teaches under the stimulus of interest. It invokes independent thought based upon observing with a motive. It provides a channel for active expression.

Classroom technic—The other plan, that of lending illustrative material to teachers, is equally individual. Its technic—part of the technic of visual aids in the classroom—is a major subject of this present yearbook. Museum materials represent the three museum subjects: science, history, and art. (Industry, as dealt with by museums, is compounded of the first two of these with the emphasis strongly upon contemporary life.) The sciences and history are easily represented by natural objects and artifacts, and also by pictures for large objects, intractable things, and general views. Sets of material, models, and miniature museum habitat and historical groups are commonly used also. Art is represented by reproductions in photograph, color, or cast, and also by ceramics, samples of textiles, and a limited range of other original objects.

Lantern slides, which are only one kind of projectable pictures, are museum materials because museums have many of the subjects as well as the special facilities for making the slides. Motion picture films are not essentially museum materials except as they are based on museum objects; but films, like slides, are in demand and are offered by many museums.

The interpretation to be put on objects in the classroom is a museum concern partly because the use dictates the character of the objects offered and prescribes the contents and arrangement of the printed catalog. In this connection it should be noted that the subject-classification suggested by the curriculum has only an indirect relation to the subject-classification of museum thinking, and this fact, among others, gives reason for close attention to teaching procedure from museum educational departments. The correlation of museum service to curriculum is an obvious prerequisite for any effective cooperation, and it is a matter which deserves more intimate general study than so far it has had.

Administrative principles—There are well-recognized administrative specifications for effective school-museum work. Instruction of classes at a museum should be arranged in such a way that at least the middle grades are reached systematically; the fifth and sixth grades are considered the most important to be served. Topics should be planned in relation to school programs even tho, by design, museum instruction goes beyond the scope of classroom instruction. Visits should be prepared for and followed up in the classroom. Material for lending to schools should be assembled with reference to the precise needs of curriculum work. Objects should be lent at the request of teachers and should desirably be of the teacher's choosing. The machinery of lending should be quick and simple, and therefore there should be a printed catalog and frequent motor truck deliveries.

These requirements can be met fully only where there is reasonably adequate support. Altho school-museum relations absorb a large share of museum energies, they are, on the whole, far from being developed to a point of adequacy. However, extension is inevitable and it will come as fast as educators appreciate progress that has been made in methods, and as people generally realize the important results that follow from a fair degree of public support for the work. There should be cooperation between museums and schools in every city, but there cannot be *adequate* cooperation except in the presence of strong public museums *and really interested school departments*—city support being a natural outgrowth of that healthy state of affairs. In short, school-museum relations are not solely the concern of museums. They are equally the responsibility of museum administrators and of school administrators.

Two serious problems—Many teachers are not able to take entire advantage of illustrative material because they lack the background which alone can simplify the selecting of objects from a catalog and the using of these objects in the classroom. It is a clear indication of the importance of illustrative material, and not an argument against it, that background is required for its choice and that children make searching demands upon teachers in the presence of such objects. This teacher-training problem is one for the normal school—and also for the museum in cooperation with the normal school. The attention now being given to it is not enough.

A more deep-rooted problem of a very different kind is the inclination among museums to reach all the school children in their communities even tho this requires sacrifice of soundness in method. Their eagerness is prompted too much by the need for developing public support which is conceived—and quite rightly, alas—to respond bet-

ter to a slogan than to a record for sound tho restricted performance. This difficulty is one which all educational institutions face. If a museum could serve well a limited number of schools or a restricted area, it would be doing greater justice to itself and to its community than it could possibly do by superficial contacts with all the school children in the city. Support would then increase—in an ideal world—as means towards extending the range of the work. How this difficulty can be overcome, save perhaps in the wisdom of decades, is not easy to see.

However, at present, it is the serious duty of educators, whether connected with museums or with schools, to study such problems realistically—in the best sense of what realism here involves—and not to be content with the easiest way.

WHILE A GREAT DEAL can be said for the visits of classes to museums and the systematic help on the part of the museum in the actual class work, whether in the classroom or in the museum itself, there are many who believe that individual work with children, not in large groups but singly or with two or three children together, is possibly more important than the handling of pupils of any age in large numbers. . . . . It is to such children and to grown people too that many museums give really very wonderful service in education.—Toothaker, Charles R., *N. E. A. Proceedings,* 1930, p. 925.

PREPARATION OF HABITAT GROUPS FOR SCIENCE AND THE SOCIAL STUDIES [1]

GRACE FISHER RAMSEY
Associate Curator of Education, American Museum of Natural History, New York, New York

SCIENCE PROJECTS often come as a response to need in the minds of children. They reach a stage in the development of a unit of work where they feel an urge to express some phase of the unit. For young children, an intimate appeal is possible and important. Whatever they can see, hear, and touch, fascinates them. Everything is so new to them. At the right time, the making and using of visual-sensory projects will aid in clarifying their ideas and give them a desirable opportunity for self-expression. And for sheer enjoyment, there is nothing to equal the fun boys and girls have in creating their own models.

Nor need any teacher ever hesitate to allow children to work out their ideas because of the apparent cost of construction. An ingenious teacher can help, if the boys and girls need such help, in finding ways of using all kinds of materials at little or no cost in the preparation of their projects. Expensive and complicated apparatus has no place in elementary science work. A few tools, plenty of bottles, jars, glass tubing, old window shades (to serve as charts), bits of cord, old newspapers, discarded cardboard, left-over paints, and tin cans have endless possibilities for elementary science projects. The homes of the children, the ten-cent store, the drug store, the waste heaps in any department store, printer's shop, carpenter's shop, or hardware store, are excellent and inexpensive sources of supply. Let the boys and girls solve everyday problems with everyday materials.

CHILDREN ARE INTERESTED IN MAKING LIFELIKE REPRESENTATIONS

A habitat group accurately reproducing, often in miniature, a scene in real life, is not too difficult for boys and girls to construct successfully. Such a group can be made with a natural or an artificial groundwork, and a painted background. Specimens of real life can be used, such as birds, dragon flies, butterflies, or moths, and, in some cases, miniature models of mammals modeled in plasteline.

Preliminary plans—The first thing to do in constructing a habitat group is to have the children plan very carefully what they wish to represent and draw a sketch to show how the accessories and forms of animal life are to be arranged in the group. Community life of ani-

[1] Ramsey, Grace F. *Project Making in Elementary Science.* New York: American Museum of Natural History, 1934. 25 p.

mals can be shown very well by means of a small group which reproduces their natural habitat. The beaver is an animal which interests children so greatly that they are most enthusiastic over the construction of a habitat group in miniature, showing the winter lodge with its dome-shaped roof rising above the water in a stream which has been flooded by the beaver dam just below.

The life history of the dragon fly can be worked out nicely and without a great amount of time. A section of a pond can be represented containing a few water weeds and a voracious dragon-fly nymph with its amazing lower lip ready to grasp an unsuspecting insect. Another nymph can be shown on the stem of a water weed, molting for the last time and emerging in the adult form with its beautiful gauzy wings. An adult can be shown in flight over the weeds, at the edge of the water, and ready for its prey of mosquitoes and gnats.

The construction of a habitat group which will show the interdependence of plant and animal life is a project which will require much careful thought and planning by more advanced pupils, but when completed, they will surely vote it a most worthwhile activity.

Material for a bird habitat group must be given careful consideration as so many of our birds are protected by both state and federal laws. Usually, only museums can secure a permit to use some of these protected birds for public exhibition purposes. Have the boys and girls secure a list of the protected birds and plan the group so that none of these will be included. The taxidermy of birds is not described here as it is clearly given in many books on the subject.[2]

Groundwork—For the groundwork of a habitat group the first essential is a smooth board cut to the desired size and one-half or three-fourths of an inch thick. This board will form the foundation for the entire group. In some cases the groundwork can be built on the smooth board but very often an irregular surface is desired to provide for a pond or a slope of ground. This rough surface can be produced in several ways. Small pieces of thin wood or cardboard may be cut into irregular shapes and tacked on to the baseboard. The edges should then be beveled to form a gradual slope. If any irregularities of different heights are desired, a piece of screening propped at intervals by pieces of wood can be tacked to the baseboard and then covered with plaster of paris. Fairly thick plaster should be worked well into the screening and allowed to dry completely. Then apply a coat of shellac to its surface.

[2] For example: Chapin, J. P. *Preparation of Birds for Study*, New York: American Museum of Natural History, 1923. 45 p.; Rowley, John. *Taxidermy and Museum Exhibition*. New York: D. Appleton and Co., 1925. 331 p.; and Hornaday, William T., *Taxidermy and Zoological Collecting*. New York: Charles Scribner's Sons, 1929. 364 p

The effect of earth can be made by coating the groundwork with some strong glue and sprinkling fine sifted earth on the wet glue. Pat this loose earth into the glue and allow it to dry. The surplus earth can then be blown off or shaken off. Another method is to omit shellacking the plaster and apply fine earth soaked in a solution of glue and water, one part glue to eight parts water. First coat the plaster with glue sizing before applying the earth and glue mixture. Then smear the mixture over the surface, tamping it down with a brush. Bits of leaves can be added to give it a very realistic appearance.

If you wish the effect of snow, ordinary paraffin can be melted and sprayed over the groundwork by dipping a stiff scrubbing brush into hot paraffin and then drawing a stick at right angles across the ends of the bristles. Very natural effects can be produced in this way.

In case a pond is to be a part of the habitat group, glass can be used. A piece of old window pane will answer the purpose nicely. Pieces of thin wood or compo-board should be built up at the sides of the baseboard and cut so as to taper off and thus give a gradual underwater slope toward the bottom of the pond. Shellac mixed with fine earth, to give a fairly heavy consistency, can be applied to the underwater portion and allowed to dry thoroly. As this dries, it gives a wet, muddy appearance which is very realistic. Now place the glass in position and treat the surrounding ground with glue and fine earth as stated above. It is usually best to leave the final coating of earth until the construction of the group is well started. This practise varies with the type of materials to be used in the group and should be considered in the first planning.

Accessories—In planning the accessories for the group, the pupils should realize that often some substitute must be found which will imitate the real thing. This substitution is especially necessary when the habitat group is to represent life in miniature. In the case of grass, many substitutes can be used—short lengths of hemp, flax, bristles, or fine dried grasses. Fine excelsior is usually the most satisfactory material even if the scale of your group is an inch to the foot. The excelsior can be pulled into almost any shape desired. It can also be curled and will take colors well. Small holes should be drilled into the groundwork wherever the clumps of grasses are to be placed. Several strands of the substitutes are then tied together at one end and this end is dipped into glue. Set the glue-covered ends into the drilled holes and allow to dry. When the bundles have dried in place, they can be cut to shape and colored with oil paints.

The construction of a miniature tree presents a problem rather too difficult for the children as there is a great amount of work in creating an artificial tree which is accurate in every detail. However, there are substitutes which will answer very well. The common sponge is a favorite substance to use, especially for a shrub where no trunk is necessary. The sponge can be cut into almost any shape desired and colored with oil paints to suit the purpose. For the trunk of a tree, a twig or branch of the right diameter (considering the scale being used in the group) may be used.

Wild pepper-grass (*lepidium virginicum*) which has been dried and colored with oil paints can be used for imitation trees. Other small plants which will not fall apart when dried can also be used to good advantage. If dried foliage is to be used, it should first be dried carefully. Then soak the dried specimens in hot water for fifteen minutes and immediately immerse them in a solution made by mixing two parts of formalin, twenty-five parts of glycerine, and the remainder water. After the material has soaked for about half a day, remove from the solution and allow to dry carefully. It usually requires about a week for this drying but in the meantime other kinds of work can be done on the group. After being thoroly dried, the material can be colored with oil paints. Evergreens and mosses as well as grasses can be preserved by this formula.

For a still more realistic tree, let the boys and girls search for a branch with twigs set at the proper intervals. They can cut this to size and make small leaves cut from paper and glued to the twigs with some quick drying cement or ordinary glue. If glue is used, have them pin the leaves into position until it is thoroly dried. Here again oil paint may be used for coloring. Small pieces of colored sponge may also be used for leaves by gluing them to the twigs.

Wire of different sizes twisted into the shape of a tree and then coated with a mixture of ambroid and plaster of paris, mixed into a paste, will often serve for a tree. When dry, oil colors will give the effect of bark. Then the leaves can be constructed and fastened as previously described. No doubt the most attractive and accurate foliage can be made from wax.

Background—Do not forget that a painted background is essential for the group. Indeed, it is taken for granted that this fact has been carefully considered in the preliminary sketch groups and that the foreground has been constructed accordingly. Often when the foliage in the foreground is exceptionally thick, a painted sky will do nicely for the background. But when the foliage is thin, a complete background is necessary. Either a painting may be made or a

carefully selected enlarged photograph colored with soft tints of water colors may be used. The semicircular background will give the most realistic effect to the group. The foreground in this case must also be made semicircular so the background will cover the entire curved portion. Several methods can be used in attaching the background to the group. If the children have made the group rectangular, the picture may simply be attached at the rear and the foreground sloped up to it by means of plaster. This sloping is not always necessary, depending upon the type of foreground used. If the more effective semicircular background is used, get a piece of black sheet iron and paint directly upon it with oil paints, after first giving it two coats of plain white lead.

To protect the group from dust and careless handling, have the children place it in a straight-sided case with a glass front and the top covered with a piece of ground glass. This latter is used only if interior lighting effects are desired.

Lighting the group—If you have electricity in your school, by all means plan to light the habitat group. A simple arrangement is to place an ordinary electric light bulb in a three-sided box directly above the group so the light will shine down thru the ground glass top, thus being evenly diffused over the interior of the group. If varied lighting effects are desired, as the soft glow of a moonlight evening, the bright sun of midday, or the rosy tints of dawn, have the pupils make a simple cylindrical frame, the sides being made of lengthwise strips of crepe paper alternating the colors of blue, yellow, and red, with one-third of the circumference being given to each color. Slip this frame over the electric light bulb and attach it to an outside knob so any child may turn it to give the special lighting effect he wishes.

Habitat group for social studies—Let us turn now from the natural history phase of habitat groups to the preparation of a group that will be useful in the social studies. Your pupils may decide that they wish to construct a group which will contain miniature human figures and a simple type of shelter. For miniature figures, a wire frame is almost always necessary. This frame can be constructed by twisting two fairly stiff wires together at their centers. These will form supports for the arms and legs. Where the two arm wires join, another wire is twisted into place to form a brace for the head.

Plasteline can be used for modeling the figure but this remains soft for such a long time that it is not always practical. However, if a plasteline model is constructed, and several figures are needed for the group, a mold and a series of casts can be made from the one

model. The figure should be modeled with the arms and legs outstretched. Then lay the model flat on its back with one half embedded in a flat piece of plasteline around which a wall of the same material has been built to a height of at least one inch over the highest portion of the figure. Now into a mixing bowl put an amount of water equal to four-fifths of the quantity of plaster needed. Sprinkle the dry plaster slowly into the water until it has a uniform consistency thruout. Remember that plaster should always be put into the water; never pour water into the plaster. To obtain the best results, have the children mix the plaster thoroly with their hands. For the purpose required here, the plaster mixture should be just thick enough to pour.

Now pour the plaster mixture into the framework prepared. After the plaster has set, the plasteline base and wall are removed, leaving the model in place, with one-half embedded in the plaster. Cut tapering holes about one-half inch in diameter and three-eighths of an inch in depth, into the surface of the plaster. These are to be used as keys in fitting the two halves of the mold together in correct relation to each other. The next step is to build a wall of plasteline around the finished half-mold. This wall should be as high above the surface of the completed half-mold as this half-mold is thick. The surface of the plaster is now to be coated with vaseline, a thin oil, a soap solution, or clay water, and plaster for the other half of the mold to be poured in. In making the soap solution, dissolve soap chips in water to make a thin syrup. The clay water is water clay considerably thinned out with water.

When the plaster has set, remove the wall and gently pry the two halves apart at the seam. You can now easily remove the model, leaving only the impression in the mold. Extend the cavity made by one of the legs down to the edge of the mold on each of the halves so it may serve as a duct into which you can pour melted beeswax in making duplicate figures. When completely dry, place the mold in hot water and leave it until it reaches the temperature of the water. While the mold is soaking, the wax should be melting. When the mold is warmed, remove it from the water and dry it with a sponge or cloth. Into the cavity of the mold place a simple wire frame around which some cotton has been wrapped. Leave the wire of one leg long enough to extend down the duct to the edge of the mold. Tie together the two halves by wrapping a piece of cord around them and pour the melted beeswax thru the duct. The wax can be hardened quickly by immersing the mold in cold water for several minutes. Now pry open the mold and remove the cast figure. With a warm knife blade cut away the excess wax on the one leg where the duct was used. A

great number of casts can be made from the one mold and their positions changed as desired by dipping the wax figures into warm water and bending the legs or arms into the special attitudes needed in the group.

To provide for fastening the figures firmly to the groundwork, use the wire extending from the one leg. If no wire frame has been used for the figure, run a wire part way up each leg. By heating the wire slightly you can force it gently up the center of the leg. Allow it to project at least one and one-half inches below the sole of the foot. As the wax hardens, the wire will be held firmly in place. Another method which may be preferred, is to insert a wire into the duct while the wax is still soft, making sure that the wire is long enough to reach the middle of the leg.

After this casting is finished, the figure will need some touching up. Almost any kind of a pointed tool such as an ice pick, awl, or nail will answer, altho tools for this purpose are on the market. Ask your dentist to give you some of his cast-off tools. Many of them will be excellently adapted for this work. The tool should be heated and the surface of the wax smoothed out. To give the wax a very smooth surface, fine sandpaper may be used to take off the rough spots and then a soft cloth dipped in turpentine may be used for polishing. As turpentine dissolves beeswax, this cloth must be used very carefully.

Costumes can be made of porous paper dipped in wax and then put in place before the wax cools. Small pieces of cloth or fur can be used very easily. Hold these in place by softening the surface they are to cover with a hot tool and then hold firmly in place until the wax cools. When the figures are completely clothed and trimmed, paint them with oil colors.

To mount the figures on the groundwork of the group, drill two holes to correspond with the leg wires and then set the figure in place. Next bend the wires at right angles under the baseboard and clinch them together.

For very small figures, the wire frame coated with a thin paste of ambroid and plaster or hot wax gives fairly good results. Features and costumes may then be made on the figures by adding a bit of ambroid and plaster mixture or wax wherever necessary. Oil paints can be used in coloring the figures.

Dwellings—Types of native dwellings in various parts of the world differ so much that only materials and their uses will be described here. In discussing what material is to be used for a primitive dwelling let the children realize that much care must be taken

in its choice as proportion is such an important factor in the accuracy of a group.

Plaster is an ideal material for the construction of some types of dwellings as an igloo or an Indian pueblo. A mold and cast may be made but a framework of wood covered with screening and then coated with plaster will often answer the purpose. Thick plaster is used for the outer coating. This should be put on in several coats. It is then worked into shape as much as possible before the plaster sets. The rough portions can be smoothed down with a knife or other tool. To imitate block of stone or ice, cut grooves into the surface. An ordinary wood screw used as a file is an excellent tool for this purpose. The size of the groove will determine the size of the screw to be used. A coat of shellac will give the plaster a hard surface and it may then be painted as desired.

For many dwellings a framework of wood is necessary. Thin twigs or pieces of old discarded wicker furniture can be used where a rough effect is needed. Even pieces of wire coated with an ambroid glue and plaster mixture can be used. When wire is being used thruout, the whole structure may be erected and then the coating applied to the wire. Oil colors will give the natural effect.

For fastening the wooden framework, a quick drying glue is useful altho size must be considered as an important factor here. If the framework is fairly large, nails can be used but they should be placed so as not to be conspicuous in the finished dwelling. Often it is necessary to fasten the framework together with small strips of bark or strong grasses so it will be realistic.

Strands of flax, hemp, dried grasses, or straws from a broom can be used for thatching. Care must be taken to see that the size of these materials is in proportion to the rest of the structure. The material may be tied into small bundles or glued into strips and then fastened to the roof starting at the lowest point and working across the structure. Attach the next row so the free ends will cover the fastening places of the first row and so on until the entire roof has been covered. The actual methods of attaching the thatch to the roof varies according to the type and construction of the framework.

Conclusion—The complexities of our modern civilization cause many children to lack that guidance from direct observation which the cave boy of paleolithic times secured from his parents who taught him how to fashion flints over the open fire. But the minds of our children are the same today as they were in paleolithic times. They need the same direct contact with things and natural phenomena which their cave ancestors had. This contact with nature and the

phenomena of their environment may be given our modern boys and girls thru an effective program of science instruction if such a program at all times emphasizes pupil experience both in the subject-matter and the method of instruction. The framework of a plan in elementary science should be so flexible that it can provide for the immediate use of the children's discoveries and experiences. If a teacher is sympathetic and uses initiative, he can so direct the children that they can work out for themselves science projects which will illustrate fundamental ideas of science far more important to them than any textbook lesson.

There are many projects which might be described but the basic technics involved in their construction have been given above, so the problem is simply a matter of adapting these technics to the special materials the children wish to use, always keeping in mind the basic principle in all of this work; namely, that accuracy and simplicity in the story represented are the first considerations. Lack of special equipment in a school will not hinder enthusiastic boys and girls from expressing their ideas in many interesting, concrete forms.

IN A TIME when the radio, the movie, and the auto threaten to occupy the " lion's share " of our leisure time, it is important that leaders in the community make an effort to promote ways in which we may engage not only in passive enjoyment, but in activities which demand self-expression.—Outcalt, Adele M., 1932 Yearbook, p. 388.

INSTRUCTIONAL VALUE OF SCHOOL EXHIBITS

FLORENCE WOLF
Principal, Grant School, Detroit, Michigan

THE CHINESE early recognized that one picture was worth a thousand words. With the advent and the success of motion pictures, methods of presenting knowledge were revolutionized. Commercial organizations quickly realized the effect on human behavior of presenting facts thru light, action, and pictures. Educational exhibitors following their lead, began to display material with the underlying purpose of getting certain knowledge and ideas before a group in a convincing manner thru posters, models, charts, and pictures. We learn not only by doing but by seeing. People have become increasingly visual minded.

Exhibits now help to vivify and to impress facts that before were merely memorized or gleaned with much effort from books. The next best thing to visiting things and places is to portray them visually. Thru exhibits, new ideas and thought relationships are constantly introduced to pupils whose experiences are inadequate. Exhibits may be the product of activities that show the work accomplished and the processes by which it is achieved.

The curio exhibit—The types of exhibits and their uses in schools are numerous. Perhaps one of the most far reaching and valuable is the exhibit of curios which ties the school with the community and forms a closer contact between home and school. Parents are interested most actively in whatever pertains to their children and to themselves. Personal curios and possessions when assembled in a school exhibit can be used to show foreign-born parents that we appreciate and respect the culture, art, and handicraft of other countries. In this way we can foster a more respectful attitude on the part of children toward their foreign-born parents.

In one school the mothers were invited to send to the school rare or antique curios which they had at home. The response was splendid. The articles were arranged in rooms according to the country of origin. Children acting as guides took parents thru the exhibit explaining the different articles on display. Some of them gave speeches worthy of a museum curator. Over three hundred and fifty mothers came. Several of them, in native costumes, assisted in serving tea. The exhibit promoted cooperation and interest between home and school.

Summer activity exhibit—This type of exhibit, usually held in September, can be used to develop an interest in nature on the part

of both children and adults. Usually the exhibit includes bird houses, garden products, fruits, and other evidences of home activity. It may emphasize various hobbies such as model airplanes, stamps, butterfly collections, and scrapbooks. Experience shows that it is well for the teachers and the pupils to discuss possible summer activities in the spring before school closes. This planning usually means that the school will be flooded with exhibit materials when school opens after the summer. The scheme not only stimulates children to pursue worthwhile pastimes in their leisure, but it helps to keep the children off the streets.

The planned activity exhibit—Perhaps the most familiar school exhibit is the one culminating in a project, which permeates the whole school. It represents prolonged concentration on a central unit, not a haphazard and hastily gathered collection of material.

At the beginning or at the close of a semester a committee of teachers may select some particular topic as the major subject for study during the year. The regular work is interpreted then in terms of that central unit or idea. As a culmination, the exhibit of the work done gives definite purpose to the study and activity. Among the topics of a general school project are the following: fabrics and clothing, foods and utensils, the history of the state, the history of the community, and the development of literature, art, or music thru the ages. The needs of the school and community many times determine the subject to be used.

A number of tentative suggestions may be given to the teachers from which they and their classes choose as many as the needs and capacities of the pupils call for. Sometimes, after work begins on a project, newer and better ideas suggest themselves and are incorporated. In order to be successful, careful plans must be prepared and a procedure worked out.

In the vital period of preparation many mediums are used such as clay, sand tables, cardboard, paper, soap, and crayons. Activities of all kinds are going on, construction work, composition, writing, reading, and art, with the central idea in mind of giving new life to old facts. It is well to remember that it is not the finished products we are working for but the creative expression of the children. However crudely expressed the pupil's own work is what really counts.

We know that a unit of work is real to a child only as long as new meanings are added and new possibilities are developed. Therefore, there is a need for wise guidance and stimulation by the teacher. Oftentimes viewing portions of the exhibit assembled in the various rooms serves to maintain or to reawaken interest.

The material for an activity exhibit is composed usually of work done by children in school but things made at home by a child, even tho assisted, should be encouraged. These non-school accomplishments show a transition of interest from the school to the home. For instance, in a study of different homes a group of pupils was planning to show Washington's home and its surroundings. Two brothers, assisted by their father, built models of the house while the rest of the group planned and constructed the grounds.

The presentation of the exhibit is usually placed in charge of a committee. They decide on a uniform mode of mounting, color scheme, concise labeling, and arrangement of materials, so that units of work will fit together in sequence and a manner to attract interest. Children may assist in the arrangement, thereby gaining an opportunity to use their knowledge of design, balance, proportion, color, and emphasis.

If possible, a central place as the library, gym, or vacant room should be used to assemble the exhibit. The presentation ought to be, as nearly as possible, self-explanatory. If there are phases which need further elucidation, much value and enthusiasm may be added by allowing the children to help in showing the exhibit. These interpreters should study the exhibit and be ready to clarify it for spectators. They may suggest to visitors ways of viewing the exhibit as well as calling attention to important facts and ideas. To add animation to the exhibit a class may prepare series of slides, composed of pictures made with either colored pencils or India ink on etched glass. These home-made captions, supplemented by commercial slides, may be shown by means of the automatic balopticon or an ordinary stereopticon.

Arrangements are usually made for all of the pupils of the school to view the exhibit and to have it explained. A time should be set aside for the people of the community. A teacher in charge, with the assistance of several children, can impart information about the preparation of the exhibit. In this way valuable contacts are made. The school is interpreted to the community, and the home thru its renewed interest will tend to cooperate more closely and to grow in appreciation of the aims of modern education.

A district exhibit—An exhibit given by a group of schools in a district may be as instructional and stimulative to teachers as a demonstration lesson. In one district an exhibit was held for the purpose of presenting as many different ideas on charts, graphs, and blackboard display devices as could be found in the district. It was hoped that the teachers might find something that could be used in

the future to vary their work. Directions pertaining to types of material desired, and ways of mounting, were sent to the various schools. Materials were selected, duplications eliminated, and the whole arranged by a committee. A short meeting was held before opening the exhibit to describe certain features to be looked for and to sum up briefly the use of charts and graphs. Splendid cooperation was shown thruout the district and the teachers felt that it was worthwhile.

Single purpose exhibits—Other means of exhibiting are the display cabinets and the bulletin boards. Many of the newer schools have display cabinets built in the corridors. The schedule may be arranged by teachers of various departments to allow definite time for stimulative displays of teaching methods, the work of the children, or both.

Bulletin boards in the rooms are often arranged by committees of children. The borders of rooms above the blackboards may provide space for children's work which can be used as a reading activity. Sometimes bulletin boards display a combination of stimulative work and the children's products resulting from such stimulation.

Where there are several bulletin boards in the corridors of the school, a committee of teachers may assign certain weeks to each room at which time that class displays material of interest to the other children of the building. If a change is desired, teachers arrange it with the committee. Seasonal topics, charts showing school progress, compositions, health and safety activities, and other subjects may furnish stimulation. For example, the children of a fifth grade planned a project emphasizing the effect of good position in handwriting. Slides were shown in the room portraying correct position but these could not be shown on the bulletin board. Since the children wanted pictures, the teacher took snapshots of good positions. With these as a nucleus the children decided what to place on the board under the main caption, "Is your writing position comfortable and healthful?"

In all types of display we should remember that it is the children's expression with which we are most concerned. Their contribution however slight should be commended. The more children's work can be shown, the greater incentive they will have to progress.

Exhibits of snapshots—Photography as a form of exhibiting children's activities is rapidly coming to the fore. It is now possible, with the improved films and cameras, to get interior pictures of group activities. The facilities for taking flashlights have also been improved so that now we may obtain pictures of creative work in

places where the light is not ordinarily sufficient, as in the auditorium, the gymnasium, and the kindergarten.

Snapshots may be used as an incentive for health by taking pictures of children exemplifying good posture, or of toothbrush drills. Pictures may include those who have accepted responsibility of good leadership in the safety patrol or the student council. There are countless ways in which photographs may help.

Photographs may be shown thru an opaque projector, placed on bulletin boards, or put in a permanent exhibit of the school's activities, such as a scrapbook. These books are always of interest to children and to parents.

Some values of exhibits—An exhibit prepared jointly by various classes and groups often brings about better cooperation and more cordial relations. Working together on concrete projects is a stimulating process that promotes unity within a building. Many more children are given the opportunity to express themselves in a creative way than in the regular school work.

Children learn to observe, to evaluate their work, and to study its presentation to others. They acquire attitudes of cooperation, dependability, responsibility, and the feeling of sharing in a common project. Their attention is focused on the numerous phases of a given topic thereby developing a lasting impression, a cultural background, and an appreciation of the work of other people. The child's stock of fundamental concepts, such as ideas of nature, children's own interests, and the world's work on land and sea, is increased.

Not only do the community and the children need the stimulation but also the teachers. Exhibits have become a popular and necessary part of conventions and conferences to demonstrate certain problems and to serve as an exchange of ideas.

The results and influences of exhibits are immeasurable for they are the products of men's ideas and activities. They show the interdependence of men and tend to enrich the developmental experiences of childhood.

HOUSING A SCHOOL MUSEUM

C. E. TRAVERS
Principal, Public School, Titusville, New Jersey

VISUAL AIDS of all kinds have been used for centuries as effective means with which to convey correct impressions of the object or topic under discussion. The textbook without appropriate illustrations is becoming a thing of the past. It is therefore necessary to supplement the textbook with aids suitable to the material at hand. This need may be fulfilled by means of a school museum made up of various exhibits, historical, geographical, and scientific in character. The organization of exhibits should follow closely the course of study so that displays may be set up according to the large units set forth in the curriculum. This plan will greatly facilitate the use of the museum. When displays are so organized, there will be less chance of a great demand for a particular exhibit at any one time during the school year.

How we started—The museum which was started in our school was the outgrowth of a trip about the schoolgrounds by our science club, of which the writer is faculty sponsor. A specimen of rock which proved to be a piece of granite was noticed by one of the group. While this rock is not found in this particular locality it did however develop an interest in rocks. Students became more observing of rocks and a project of rock collecting was under way. During subsequent field trips more of the various rocks were collected and as the project became organized, contributions were made by club members until a considerable number were collected.

This interest naturally led to a study of Indian implements made from rock and so an arrowhead collection was started. From this point on, the desire to collect grew and spread to the various subjects, and classes became interested in exhibit materials which could be used in the various studies—as history, geography, nature study, and science. A committee was organized whose function was the gathering of materials from industrial concerns, who were very cooperative and contributed generously. Needless to say the museum was well under way being supplied by field trips, interested parents, and companies.[1]

Housing the exhibit—In order that a museum may be of value, a plan should be devised so that collections pertinent to the lesson under

[1] A number of schools obtain materials by exchanging specimens with schools in other countries or states. For example, pupils in California might send samples of redwood trees to children in Virginia in exchange for samples of the boxwood which grows near many historic shrines. The number of interesting specimens which may be exchanged without great cost is almost without limit.—*Editorial Committee.*

discussion may be easily and quickly brought before the children to assist in the lesson at hand. The housing of a school museum is therefore tremendously important if classes are to derive the greatest benefit from such visual aids.

It has been found that small cases are much to be preferred to the usual large glass cases with heavy plate glass and indirect lighting which are both expensive and less useful for immediate classroom use. The most satisfactory cases measure 24 inches in length, 14 inches in height, and 6 inches in depth, and are covered on the front with glass and on the back with beaver board or plywood. This size is very convenient for class use and occupies but little space. All exhibit materials are fastened to the back board with wire, screws, or nails. In this way there is little danger of the displays being damaged. If closer examination is desirable the entire back board may be removed and all exhibits in the case brought within closer view.

After the collection is properly placed in containers, labeled, cataloged, and installed in the individual exhibit cabinet it then is available to other classes. Teachers reserve the use of the exhibits well in advance and they are delivered at the proper time for study. When an exhibit is not in use it has its place in the hall for general exhibition, for this reason the small cabinets mentioned have proved themselves extremely convenient and adequate for the purpose. Exhibits are securely held in place so that there is no possibility of breakage. In housing small vials they are securely wired to the backing of the cabinet as are wood collections and the like.

The greatest problem presented itself in the fastening of rocks and minerals. This difficulty was solved by making plaster of paris pedestals in which the mineral was set and a small block of wood placed so that it could be screwed on to the cabinet backing. In the case of small vials of pond life which are corked, sealing wax was used to prevent the cork from loosening and the possibility of the contents spilling.

Each case has been so carefully and sturdily constructed there has not been any mishap in which exhibits have been rendered useless.

As our museum continues to grow and more exhibits are added, more of these cases may be brought into service. The simplicity of these cases makes it possible for any manual arts classes to construct them easily at very little cost. The approximate cost for each case averages about fifty cents. The price depends upon the type of wood used as well as the thickness of glass. However, it can be readily seen that the expenditure is within the sphere of any elementary school.

As the various cases are used thruout the term it may be necessary to find a place where they may be stored until needed. This in no way presents a problem for there are innumerable places where they may be stored and still be on display and therefore be of use to children to peruse in leisure moments. The long, usually empty halls offer great spaces where they may be hung by means of stout screw eyes fastened in the top of the case. In this way they will help to take up large empty spaces and also provide something of interest to the children.

Outcomes of museum study—The value of this museum cannot be overemphasized for it has supplied much interesting material to assist the pupils in their studies. A clear conception of the cotton boll for example, has unquestionably been formed, likewise the cotton seeds which have been placed in small mayonnaise jars and suitably labeled. These jars are very convenient receptacles in which to place small seeds, grains, liquids, preserved pond life, and countless other materials. In a short time children will have brought to the school many jars and vials useful in keeping displays. A grain collection sponsored by the rural children is a very interesting one and presents to the children a conception of the types of farming carried on in our outlying districts. Again a value of the study of environment is brought out thru such collections. A follow up of our farming study will be the collection of soils peculiar to this locality.

A study of the forest has yielded a group of suitably labeled and mounted pieces of wood found within this area. This project will also lead to a closer cooperation with the park officials to secure name plates for the trees and shrubs in our park. In this way we shall also have a natural exhibit of trees and shrubs within a short distance of the school.

The study of local industries has also enlarged our museum thru visits at the factories where the children were able to see the various processes thru which rubber, for example, passes to the finished product. To assist the classes who have not as yet been studying this product, interesting exhibits have been motivated in this way. The same holds true with the trip taken to the paper mill within ten miles of our school.

A few of the collections planned by our science club for the future include: a weed seed collection; a study of birds as destroyers, their nests and habitat; wild flowers of this locality; and insects injurious to farm crops.

HOW SCHOOLS USE THE CHILDREN'S MUSEUM

ROWENA SMITH WALKER
Librarian, A. L. Holmes School, Detroit, Michigan

THE CHILDREN'S MUSEUM is one of Detroit's distinctive developments in visual education. It had its beginning about fourteen years ago in two basement rooms of the old Art Institute building, sponsored jointly by the board of education and the arts commission. Since that small beginning the museum has grown and developed to such an extent that its value as an aid to teaching is inestimable.

In 1925 the museum came under the exclusive control of the board of education. It is now housed in a three-story building in the art center of the city. Its staff has grown to include, in addition to the curator, several assistants and delivery boys with trucks.

The museum has two main lines of activities, a lending department which provides teachers with material for classroom use, and an exhibit department where both permanent and temporary exhibits on topics of interest to boys and girls are shown.

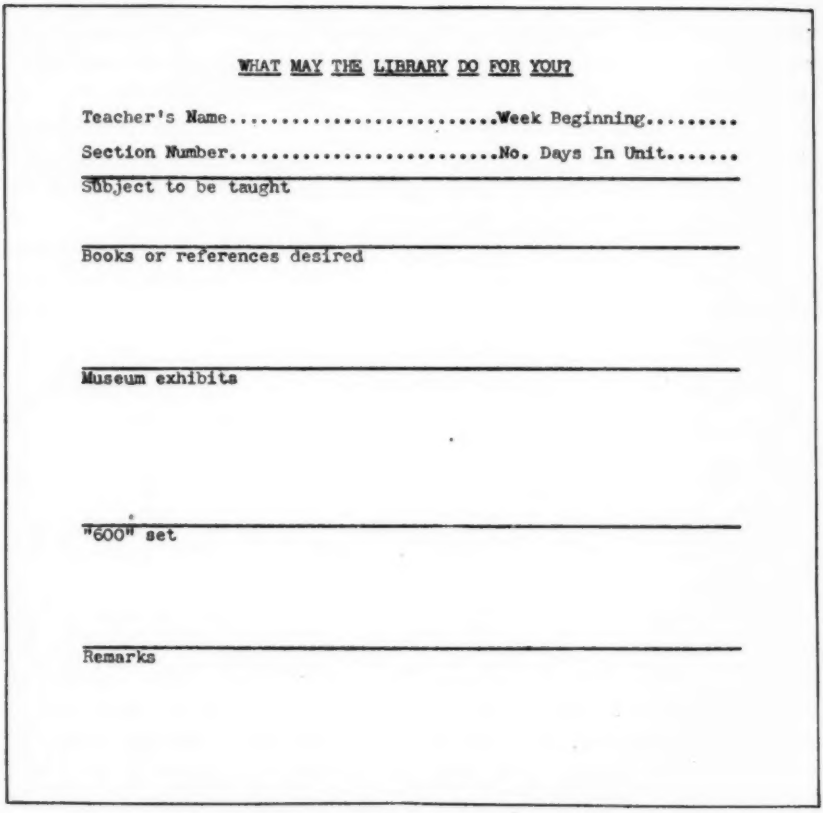
Activities of the lending department—The lending department reaches approximately three-fourths of the schools. Requests are sent in by all parts of the school system from the kindergarten thru the college. The lending collections consist of specimens, pictures, and all sorts of illustrative material on almost every subject of interest to children, including geography, nature study, history, art, literature, health, and safety.

The museum delivery service delivers collections to each school every two weeks. Delivery dates for the semester are sent out at the beginning of the term so that any teacher wishing to make a semester schedule of requests may do so. Every attempt is made by the museum to reduce the amount of "red tape" for teachers desiring to secure materials. The teacher may mail the request, telephone it, or, when necessary, go in person to select special material.

Every collection sent out is tagged with the name of the teacher and school to which it is going. With every collection a list of contents is sent. Every article is marked. In addition to the statistical nature of the listing form, there is an opportunity for the teacher to express his approval or disapproval of the museum's choice of his material. Such an expression is, of course, of future help to the museum staff.

Museum material is usually delivered to the school office or to some other designated room. Each school has its own organization for carrying on museum work within the building. Sometimes it is

taken care of in the office by the clerks, sometimes in the auditorium by the auditorium teacher. In our school as in many others, the school librarian has charge of museum work for the entire building, and does the clerical work attendant to it, communicating with the museum by telephone when necessary. It is felt that by unifying the museum work and making one person responsible, much time is



WHAT MAY THE LIBRARY DO FOR YOU?

Teacher's Name.....Week Beginning.....

Section Number.....No. Days In Unit.....

Subject to be taught

Books or references desired

Museum exhibits

"600" set

Remarks

FIGURE 1—School Library Service Blank.

saved and waste eliminated both for the individual teacher and for the staff at the museum.

In the actual handling of the material the librarian is assisted by the student library club. Messenger service incidental to the museum work is also a part of the club's duties. Our method is as follows: At the beginning of the term museum delivery dates and all other essential information are placed in the hands of each teacher. Whenever necessary, additional notes are placed on the office bulletin board.

Usually a reminder is given in this way the day before the material is to be collected. Every week library service slips (See Figure 1, "What May the Library Do for You?") of which museum work

Orders for material should be in the Museum one week before delivery date.

Material for different dates must be placed on separate order blanks.

ORDER BLANK FOR MATERIAL

FROM

THE CHILDREN'S MUSEUM

94 PUTNUM AVENUE

School_____ Teacher_____

School delivery date when exhibit is desired_____

Do not Use	SUBJECT	Grade

All material must be in the school office by 8:30 A.M. on the day it is collected by the Museum. Requests to keep the material additional time may be made by telephone (Co. 3195) two days before the collection is due. The name and number of each collection to be extended must be given.

The Museum trucks go to your school once every two weeks. To avoid confusion in dating your orders, please use exact date on which delivery is to be made at your school.

FIGURE 2—Order Blank for Museum Materials.

is one part, are sent to the teachers at bell time. One week before the museum delivery these slips are collected. Requests for museum material are copied on museum request blanks (See Figure 2, "Order

Blank for Material") by the librarian and mailed to the museum four or five days prior to the next delivery date. The librarian keeps a notebook record of all requests for reference (See Figure 3, "School Library Record of Museum Materials"). Then, except for stray telephone messages to people who have forgotten dates, or misunderstandings of any nature, her work is done until the next delivery date, when all material to be returned must be collected in the office ready for the delivery boy when he brings the next installment. Our collections vary in number from 10 to 100 items with each delivery.

The teachers feel that the museum is a storehouse upon which they may draw to enrich their teaching. Their use of the illustrative material is wide and varied. For example, when the music teacher is stressing music appreciation, a scene from the opera may be requested.

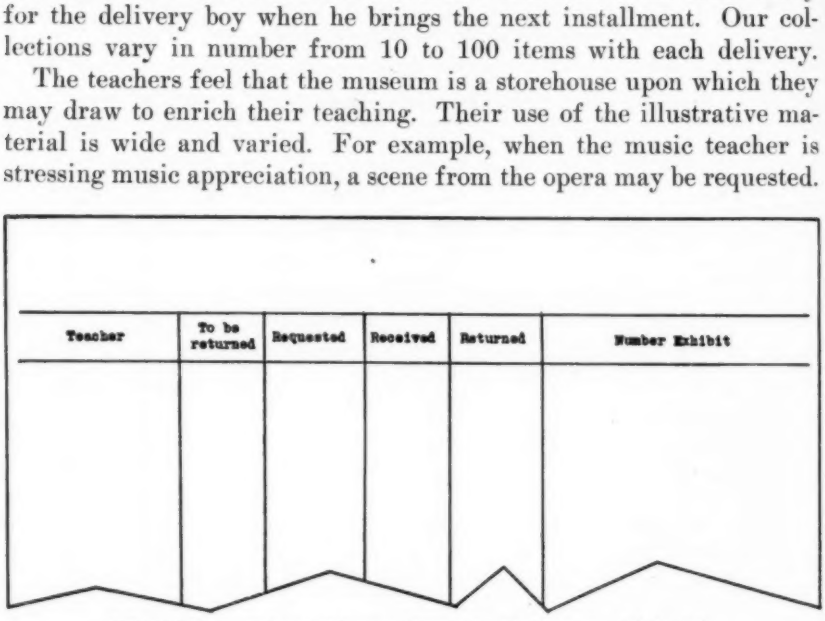


FIGURE 3—School Library Record of Museum Materials.

If the auditorium wants to have a safety bulletin, a set of posters is often desired. A lower grade literature teacher may wish pictures of circus animals for a composition unit. An upper grade literature teacher may need a picture of Robin Hood and his Merry Men and an illustration for "Sea Fever." In science when the children are studying the contributions of Greece and Rome to our modern civilization, large pictures of a Roman aqueduct and a Greek temple are sent with other relative material. If the homeroom of the fourth grade is trying to discover the natural resources of Michigan the pupils are helped greatly by specimens of iron ore, copper, salt, and lumber. Perhaps when a class wants to achieve a decorative effect, the figures and tapestries of foreign countries from the museum may be used to lend color and charm to the room. Of course, the nature study teacher would be handicapped without the museum's collection of bird and animal specimens.

When the general arts course lays special emphasis on clothing and shelter, specimens of textiles and examples of architecture are requested from the museum. The library itself in its desire to broaden the children's interests draws upon the museum very often. During Book Week, exhibits of the literature of other countries are planned. The museum is called upon to supply some little, interesting, typical illustration for each, such as a wooden shoe, a lace handkerchief, a hand-tooled book binding, or an elephant tusk. Book talks are much more interesting when accompanied by pictures of the author's home and fireplace and desk. The librarian has in mind the building of interests that will prove a constant source of joy in the ever increasing leisure time of her students when they are grown. Exploration of other libraries and museums is suggested by lovely large prints of interiors of the Library of Congress and the British Museum.

Many of the schools have locked glass display cabinets in their corridors. In these the teachers may show material of a costly or fragile nature which would otherwise be inaccessible to the majority of the children. These exhibits include antiques, fine carvings, pottery, weaving, glass, and articles of like nature.

Teachers and supervisors may make suggestions to the museum staff regarding the desirability of materials. As the courses of study change, the museum collections change to meet the new requirements. When new courses are published there is a statement as to what helpful material may be obtained on a given topic. The museum is preparing sectional catalogs for its lending collections.

Permanent exhibits—At the museum the permanent exhibits center around the interests of young people. On the first floor exhibits relate to arts and crafts. In one room important processes of pottery are illustrated, with examples of some of the world's great pottery works. A room is devoted to various forms of peasant art from Russia, Germany, Czecho-Slovakia, Switzerland and other countries. Another room is given over entirely to textiles and weaving. Children are always interested in Indian life. The museum has consequently acquired considerable material relative to it, including Indian costumes, occupations, and crafts.

There are two bird rooms and one mineral room on the second floor. The museum has a wealth of natural history material which is not permanently available, due to lack of space.

The exhibits on the third floor relate to world history beginning with the depicting of prehistoric life in Europe. This display includes a series of pictures, specimens, and models in miniature. This part of the exhibit ends with the showing of miniature models of the

landing of Columbus, an Indian village characteristic of the Detroit area, and Detroit as a trading post under Cadillac. Other important events in the history of the city will be shown when funds are available.

Temporary exhibits are set up at the museum covering subjects of seasonal and timely interest to children. At Christmas time thru the courtesy of the state conservation department, it is possible to exhibit and to send out to the schools various types of Michigan evergreens. A pottery wheel has been set up under the direction of a practical potter, and experience in its operation given to the children. Looms have also been used in the same way.

Other activities of the museum are the conducting of clubs and art classes on Saturdays. The clubs aid in the development of interests and hobbies. The art classes are for gifted children and are under the direction of a trained art teacher.

Conclusion—The value of the lending collections are obvious, but of what value are these permanent collections and other museum activities to the classroom teacher? The answer is, that by encouraging the young student to take part in these activities the teacher may help him to acquire an appreciation of both nature and art, to start a hobby that will be a lifelong interest, and to develop within himself resources which will be of everlasting pleasure and satisfaction.

ALL OVER THE UNITED STATES we find the larger cities and many of the smaller progressive towns establishing departments of visual education in connection with their school work, and what is more encourging we find in the last five years a better understanding of the term visual education. It does not mean education by motion picture only, but is now understood in its broadest sense. Today we realize that visual education is carried on preferably by object illustration, and only secondly by pictorial illustration. . . . The desire for investigation on the part of the child must always be awakened when presenting museum material. The teacher should use this material in such a way as to arouse the spirit of curiosity and research.—Meissner, Amelia, *N. E. A. Proceedings,* 1929, p. 403-05.

USE OF BLOCKS IN PRIMARY GRADES

O. E. HEATON
Principal, Logan Platoon School, Spokane, Washington

VISUAL AIDS as generally understood by teachers consist of anything where the greater part of the educative ideas come thru the sense of vision. In many cases the idea is linked very closely with one or more of the other senses; for example, the sense of touch gives the child the idea of solidity and the sense of taste that of agreeableness or of repulsion. But back of these is the sense of sight which acts as a coordinator to bring the other senses into a harmonious whole and receives the primal information and ideas that go to build up the child's background.

Blocks easily adapted to young children—Children of the preschool and primary grades greatly limit the use of visual materials. Their senses and minds have not been trained to a point where they can appreciate and assimilate many visual aids. Therefore, it is necessary for the teacher to select carefully the type of visual aid that conforms best to this stage of the child's development. Cumulative aids that will keep leading children forward in the educative process are the best type to select.

Since the preschool child does not have the guiding hand of the teacher to help procure the right kind of play materials, the teacher can do much thru association with parents in preschool circles, parent-teacher associations, social clubs, and other personal contacts to guide parents in choosing the right play materials and toys. There is a vast amount of harm done by well-meaning parents because they do not understand the psychology underlying visual aids that apply to children of this age.

Montessori, one of the greatest modern exponents of visual aids among preschool and lower grade school children, spent a great deal of time, thought, and effort in developing a type of building blocks that would fill this need. Since then many other educators have developed sets to meet the same need, and educators today have quite a large collection of blocks from which to choose. These blocks vary from the small red-faced letter type to the large mechanical blocks from which an unlimited variety of things may be constructed. The simplest, most variable, and most easily handled blocks should be used in the preschool and in the lower primary grades. Then as the grades advance, the more difficult—more thought-provoking and those that lend themselves to a wider range of uses—should be supplied.

Stimulating the imagination—The unimaginative child is a difficult educational problem and is handicapped all thru life by his in-

ability to see things in their correct relationships. This inability is particularly noticeable in mathematics. One of the most important values of block work is to develop the imagination of the child. If the imagination of the child is to grow naturally, he must have some opportunity to try it out and see if the real thing, after it has been produced, conforms to what he thought it would before he began to build it. In many cases he will find during the construction process that some things cannot be done which he thought could be, and that in many respects it does not look as he had it pictured, so he builds it over again. This process is kept up all thru the primary grades. These vivid pictures of reality become the guiding element in the development of the imagination. Much of the weirdness of the imagination of many children, built up thru the wrong kind of stories and literature, is absent here.

Developing leadership—Helping reticent children to develop leadership qualities is most difficult, and yet they are the greatest assets a child can have. If he can meet his fellow students easily—has that magnetic pull, winning way, and pleasant manner in meeting people—he has gone a long way toward success. There are few things in primary work that give the opportunity for this development as do building blocks. Here the children meet in groups to work out problems, usually of their own choice. They have their own planning to do; assigning work to each in the group; seeing that the plan they are working out is followed—insisting that when changes are necessary, they be made in an orderly way; providing the type and kind of blocks best fitted for particular places; and watching their efforts develop and grow into a finished project. These activities provide opportunities for the boy or girl who has that peculiar make-up of natural leadership to take charge and carry on. It also gives the teacher, by shifting the personnel of the group, an opportunity to form groups of lesser ability where some child will naturally take the lead and thus receive the training and development that he so badly needs. This shifting process may be carried to the point where practically every child in the room has had the benefits and the inspiration of doing something a little better than someone else. He has experienced the thrill and satisfaction of leadership, of planning and helping someone else not quite his equal in that particular field.

We sometimes wonder whether the things that children show a special talent for in the schoolroom carry over into their outside activities. If we think for a moment, most of us can call to mind many examples of this carry-over. In fact, it is the rule and not the exception. Not only do we find the academically-minded bright

children monopolizing the leadership, but we find also many children who fail in academic work doing a good job at leadership because of the training they have had in activity and so-called extracurriculum work. Much of this training, particularly in block work, begins with the activity program in the primary grades.

Developing the ability to observe—Another educative value of block work is the training of the pupil in observation. Here he is all attention. He must see every little detail, must see what shape of block will fit in a certain position, and must decide whether to use long, short, round, square, large, or small blocks. Sometimes his eyes will deceive him; then he must determine the right one by trial. It may be necessary for him to pick up several blocks before he gets one that will fit. Sometimes he must put two or more together to fill a certain place.

If he is working with colored blocks, he has another problem to care for—color. Here his block work integrates with art. He learns combination and arrangement of color in working out any color scheme. His number work is also improved. He must know how many blocks, of whatever color he uses, go to make up the different parts of his pattern. He is learning to see things in their right perspective and is building up a clear and definite foundation for visual accuracy.

Developing originality—Creativeness is a virtue of which anyone may be proud. With many children it is most difficult to acquire. Children are naturally imitators and followers. As a rule it takes much time and patience to develop originality, and yet no child can be a good student without it. Originality is the base of progressive work. The earlier this trait is developed in the child the greater his chances are for outstanding work and success. The child starts his educative process by following and mimicking, and it is all too true that some children never get very far away during life. True education teaches children to think, to depend upon themselves, to wrestle with their own problems, and when they win, to experience that pleasurable satisfaction which comes only thru one's own success. Building blocks, in furnishing a child an opportunity to work out things for himself, lay a solid foundation for the training and development of originality. Here he handles the blocks, he places one upon the other, he changes or moves them to another place, he studies the result, and, if not pleased, he changes them to still another position. He thinks and plans. He tries out new combinations; the outside world is shut out from him—he is laying the foundation for original thinking, and he is doing an exceptionally good job.

Developing independence—Many children, when they enter school, have no clear conception of taking hold and doing things by themselves. Their initiative, if they have any, has been neglected and lies undeveloped. They do not know how to begin new things. They have depended upon their parents to show them how to begin. The parent, thinking he is doing the child a good service, directs the activity thru to the end. In other words, unknowingly or because it is the easiest thing to do, the adult often directs the child's activities to the point where what little initiative the child has is destroyed. If the child is to do outstanding work in school as well as later in life, his initiative must be developed. If his initiative is weak, it cannot be developed by giving him too much responsibility and expecting too much of him at the beginning. He must be guided, and there is no better way of doing this than by working with others of about his same ability where he can take the lead in at least a few things and experience satisfaction thru success. Most children are active and like to do things with their hands. Block work gives them this opportunity, and rarely is there a case in which it does not bring results. They are permitted to go their own pace, in their own way, thinking it out, and doing it as they think it should be done. They are learning to do things on their own initiative, and the educative process takes on an entirely new meaning to them. No doubt many children become "problem children" thru the non-development of their initiative. Let us be careful, as far as it is possible, to supply children with the best materials and conditions thru which the initiative may be developed.

Developing mechanical skills—Since this is essentially a mechanical age, it is necessary that children be trained to some extent along mechanical lines. There is no place in the school where this can be started quite as well as in block work in the primary grades. Here the child is able to work out the things he hears his folks talk about at home, the things he sees from day to day and yet does not understand, and the things he reads about in his school work. How curious a child must be to know what is on the inside of things to make them act as they do, how things are built up, how the different parts are put together, and how to arrange the whole to get certain results. Building blocks furnish adaptable material with which he can try out his mechanical ingenuity. If his fancy happens to be the construction of a train, he becomes so interested in it that he asks his teacher, his folks at home, and others what to do. He reads what he can find about it, he looks at pictures and cuts, he is becoming mechanically minded. The developing of such intense interest leads to other fine

results. He sees where he is handicapped, where he could get greater satisfaction if he knew more about other things, and as a result all of his other work begins to improve, and you have him started on the road to success.

Developing health—One of the cardinal principles of education is the protection and care of child health. The right kind and type of physical exercise does much, not only to prevent illness, but also to develop the body to a point to where it can withstand and throw off the effects of disease. It is most unhealthful for a small child to sit for long periods in the ordinary school seat. He is likely to develop habits of posture that will handicap him all thru life. His muscles are cramped, his spinal column becomes curved, his nerves are affected, and his whole body responds to and is affected by this adverse condition. The physical exercise of growing children should not be too strenuous but strenuous enough to cause the muscles to put forth just a little greater effort each time the act is performed. Block work conforms to this ideal. There are large blocks, small blocks, heavy blocks, and light blocks that supply the child with the proper materials for his best physical development.

Developing cooperation—The ability to work with others is one of the finest traits to be developed, and yet it is difficult of achievement. In years past we have prided ourselves that we were teaching individualism, that we were teaching our pupils to depend upon themselves, to think for themselves, to sit by themselves, and to be themselves. We all recognize the importance of this type of teaching, and yet it is possible that we are losing some greater values in character education. If, among our primary children especially, we paid a little more attention to cooperative activities, our attempt at character education would be much more effective. Cooperation is the keynote in block activity work. Here children are learning to get along with one another, to live and to work together peaceably. The development of their personality and character traits is taking place under desirable conditions. We as teachers should be alert and open-minded to the possibilities of this indirect influence in education.

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CHAPTER V

EXCURSIONS AND FIELD TRIPS

EDITORIAL COMMENT

IT REQUIRED only seven days of trumpet blowing to level the walls of Jericho. How many years will it be before the last vestige of "academic isolation" has been torn from around the elementary-school classroom? The answer depends in no small degree upon principals.

The idea of first-hand contacts with the real things of life is not new to education. Certainly since the time of Comenius there has been a continuous stream of major and minor prophets of the need for reality and genuine experiences in school life. Rousseau, Pestalozzi, and Froebel made their respective contributions. In our own country Mann, Barnard, Sheldon, Parker, and Dewey have helped to break down artificiality, isolation, and pretense in education. The excursion or field trip, while only one of many ways of introducing reality and objectivity into instruction, has great possibilities in the modern elementary school. Progressive schools in Russia, Germany, and other countries are turning to the excursion in a manner which suggests that American educators may well re-examine and re-evaluate this vital aid to enriched learnings.

The first article in this chapter lays down some of the fundamentals in preparing for and carrying out a successful excursion. Another article shows vividly how the excursion may be used to enrich the learning experiences of children. One contributor tells of the possibilities of journeys in connection with schools in small communities while another points out the variety of opportunities in a metropolitan center. A classroom teacher describes an excursion in which is shown the importance of imagination, resourcefulness, and adaptability on the part of the person in charge. A rather unusual turn in the excursion idea is described by one who points out the possibility of contacts with concert music. Finally, the chapter ends with a survey showing the types of school journeys utilized by typical elementary schools and the evaluation of these excursions by the principals.

The available literature on the school journey is so extensive that the references cited at the end of the chapter may be considered to be only an introduction to this interesting field.—*Editorial Committee.*

THE ORGANIZATION OF FIELD EXCURSIONS

ARMIN K. LOBECK
Professor of Geography and Geology, Columbia University, New York, New York

THERE ARE all sorts of excursions, from an afternoon's hike to a summer's trip far from home. There are all types of personnel, from young immature high-school and college students to people of experience and broad training like those who participated in the excursions of this year's International Geological Congress. Some parties include people of all types. Therefore let us take a few specific and actual examples which run thru the whole gamut of possibilities.

First, there is the short afternoon's trip with young inexperienced people—Permit the writer to state dogmatically what should and what should not be done with them. (a) Do not spend too much time getting to the scene of action. The party must be fresh physically and eager mentally to discover what it is all about. (b) Do not crowd too much into a single afternoon. One good, well-rounded idea or combination of related ideas is best. Concentrate on this and play it up in as dramatic a way as possible. Play with its various facets. It is very likely that the ground will be familiar to most members of the group. They will think they know all about it. Startle them, then, by bringing out or having them discover much that hitherto had been hidden from their understanding.

(c) Members of the group must participate actively, and not be passive listeners. They must have something to do, each one of them: pace off distances, determine locations, measure thicknesses of formations, look for boulders of a certain type, seek for fossils, note the character of the vegetation, and occupation of the region whether in buildings or farms. The pupils should make sketches, drawings, plans, maps, take pictures, and write descriptions. (d) Keep the whole proposition simple, or at least make it seem so. Before leaving one place of observation go over systematically all that has been observed, sum it up in topical form, and leave the job finished in ship-shape fashion. Each member must feel that he has conquered the situation, that he understands it, and that there is nothing quite so interesting as to tackle another spot where this routine can be repeated.

Somewhat more elaborate is the trip which takes the party out over one or two nights—This excursion is probably best for a group of advanced high-school or college age. (a) This kind of a trip must have a certain glamor of importance surrounding it. It must not be

a casual undertaking. There must be quite a little machinery in evidence. That means notebooks, maps, a compass, a knapsack, and other things must be obtained, thought about, and worked over beforehand. There must be some preparation. Even doing mere mechanical and routine things in the way of preparation is advantageous. (b) The leader of this party must know his ground perfectly. He must have a schedule worked out ahead of time and he must review it so thoroly that he will be prepared for every minute of the two days that he expects to be out with his group. He must know where they will be practically every moment. He knows exactly where they will stop for lunch; he knows just where and when comfort facilities will be provided; and he knows just how much time can be afforded for the various stops. On a short trip of this kind he leaves nothing to chance or to sudden inspiration. (c) Keep things in action. Don't let the interest lag. Two days is not a very long time and interest should be sustained more or less continuously. There should not be long gaps with nothing to do or to see. Find an excuse to stop and to observe, even in a familiar environment. There is sure to be something new about it anyway.

(d) Do not appear hurried, or concerned about your schedule. There must be so much time allotted to every part of the excursion that observations may be made fully and leisurely. Nothing so detracts from a young member's complete absorption in his task as to be thinking about what has to be done next, and to be urged to hasten at every step.

A third type of excursion is one which involves two weeks or more of travel—In this case the party is very apt to consist of mature individuals. They may be ignorant of the subject and less adept at learning than young high-school students. But they are less ignorant of life itself and can usually be depended upon to observe and follow instructions.

(a) The excursion from beginning to end must be planned in every detail. The leader of the excursion writes down a schedule which accounts for every hour of the time from beginning to end. He plans for every meal, for every stop, for every move of every member. This last statement does not mean exactly what it says. For example, members may be left free a whole day to follow their own inclinations and do whatever they like. They are on leave of absence. But this is just a part of the scheme. Such a plan by no means needs to be considered sacred and inviolable. It is simply a working scheme and unforeseen circumstances may dictate a change of plan. The leader should therefore always be alert to all situations

which might mean a revision of the schedule in its smaller details. (b) Do not announce to the members of the party all of the plans. There are two reasons for this. Plans may be changed. Therefore give them only the skeleton, the part to which they will most certainly adhere. Then, again, it is a fine thing to spring surprises. If it is planned to visit some feature of interest (a museum, for example) during the evening, it is not necessary to advertise this fact, especially if certain preparations for admission have to be made. Simply put in the schedule " Lecture, tonight, as usual, 8 o'clock, in Room A1." In other words, don't play your last card. There ought to be one unexpected event every day. (c) Give all of the members of the party complete freedom occasionally. On a two weeks' trip there should be two half-days of liberty, for sightseeing, writing up of notes or ordinary relaxation, and perhaps in addition one or two evenings for which nothing is scheduled.

(d) On long auto and bus trips the published schedule should mention all regular stops and the probable length of time allotted to them. The problem of finding comfort stations for a group of thirty people is always present. Some party leaders neglect this entirely, often to the discomfort of the members. (e) Give out each morning a memorandum of the day's activities. This bulletin is like the morning paper, it is something anticipated and helps to start the day right. It is the framework around which the day's activities are centered. If the trip is not too long and if the plans are thoroly matured before the start, these sheets can be prepared prior to the journey. For a long trip, however, which involves certain preparations en route, these sheets can be typewritten the night before on a portable typewriter which the leader carries with him. At the bottom of each day's sheet there is a statement concerning the materials, maps, and similar items needed for use on the following day so that the members will not pack them up in their suitcases where they will not be available. There is also a note concerning the hour of rising the following morning.

(f) If you wish the most considerate treatment at hotels, do not have your party appear like a group of tourists. Do not blow a whistle or clap your hands to get their attention. Arrange things so you do not have to get their attention. Speak to each one individually. For example, upon arrival at a hotel if you wish to instruct all members to be down for dinner at 6:30, don't shout this out. Stand at the desk and as the members come up for their keys, speak to each one individually, giving what special instructions may be necessary in each case. The party should be like one large family, and not like a squad of soldiers or an athletic team.

Moreover, general announcements and special instructions can often be made before the party reaches the hotel when you have them together at your last stopping place or lecture.

The most advanced type of excursion is the one which has for its members distinguished individuals and experts—Don't set any puzzles for them to work out. Don't use the pedagogical methods suitable for younger students. Come right out and tell them the facts. They will catch on very quickly. Give them the best you have without any frills. In some respects such a party is the easiest to handle. You don't have to pamper them in any way. They will be put to much inconvenience without groaning if the results justify it. You can be much more informal with them than with less experienced groups. The fewer papers, paraphernalia, and machinery the better. A simple outline and the necessary maps are all they want. They will do a lot of observation of their own and very little reading, whereas the younger novices will do very little observation and a lot of reading, if they can get their hands on something to read. Remember these mature people can " swim " already and you are just showing them some nice places to practise their art. With the younger groups, teaching them " how to swim " is one of your problems.

Summary—Altho the foregoing discussion has emphasized specific differences to be kept in mind in connection with various types of excursions some of the basic points may be briefly summarized as follows:

(1) Plan well in advance as to the purpose, schedule, and activities of the entire trip.

(2) Be sure the unit for study is not too comprehensive.

(3) Plan surprises to keep up interest.

(4) Provide activities and opportunities for everyone—allow no mere spectators.

(5) Systematize details and keep everyone informed as to general plans, equipment, hotel arrangements, transportation, and individual responsibilities.

OUT OF THE CLASSROOM INTO LIFE

H. ELOISE BRYAN
Principal, Cinnaminson Township Schools, Riverton, New Jersey

THE CHANGING of customs, ideas, opinions, or philosophies often comes about very slowly. There are always individuals who are ready enough to accept newer points of view, to revamp traditional theories, to discard useless and outworn measures; but the mass of people hug to their bosoms well-known, well-tried, and well-established customs, ideas, opinions, and philosophies. Indifference to change—often downright opposition to it—is characteristic of organized society. Up to 1845 a Boston municipal ordinance made bathtubs unlawful except upon medical advice; the first man who opened an umbrella in the city of Philadelphia was arrested; Harvey, who discovered the circulation of the blood, was called "crack-brained." Human inertia drags at progress.

A changing world demands a dynamic school—Inertia accounts for the lifted eyebrows, the raised voices, and the harangues heard regarding some of the new ventures in the field of elementary education. It is not alone the man on the street who questions changes in our schools. There are elementary-school principals who do likewise. Afraid of an experimental method which must sort what is effective from what is ineffective, ultra-conservatives want, at all costs, to remain static, undisturbed, untroubled by "new-fangled" innovations. This isolation is impossible in a dynamic world while working with flesh and blood children. A changing world demands changes in our schools. To evaluate educational procedures; to face squarely present conditions; to advocate intelligent changes which are at the same time sound and effective are some of the chief responsibilities of the principal of today. Earnest, intelligent, well-poised effort will in time produce a newer point of view in the general thinking regarding what kind of a place a school really should be, and what contribution our schools should be expected to make to civilization. The dawn of a new day is already on the horizon.

Just change is not enough. The changes must be valid. How can validity of proposed changes be attested? The primary rule of thumb is: "Will the changes prove beneficial to children?" The newer emphasis lessens the importance of what adults think is of benefit to children, and scientifically determines what children actually need and thrive on in the difficult process of adjusting to a complex and baffling universe. What we want to know first, then, in evaluating our school procedures, is: What kind of animals are children? How, what, when, and why do they learn? Facing reality in

such quarters will provide guides for determining whether our schools are in need of some changes and, if so, what changes will produce desirable outcomes for child nurture.

Progressive practises are practical—The foregoing theory may be attacked as impractical unless supported by actual experience. The writer has had such actual tests under typical conditions in a rural community. We have two consolidated schools, one for colored pupils and one for white. Eight buses provide transportation. The enrolment in the district is about 425. The township covers a wide area with scattered population centers. There is no community civic center other than the school. Ten years ago the school was scarcely noticed by the general public. Often antagonism was manifested, but little constructive interest. It was said of the community that "nothing could be done for it educationally."

This brief analysis is given so that no one will feel that progressive movements in our schools need be confined to any particular type of community. We often hear it said that it is all very well for experimental schools, or wealthy communities, or public-spirited citizens to make possible for children more desirable opportunities, but that the *average* public school and the *average* teacher have very little chance to have a part in the newer type school. The writer is inclined to believe that human inertia, more often than not, is the greatest single factor in such a point of view. The modern school program makes more work for teachers, supervisors, and superintendents; it employs many little-used brain cells; it demands adaptation of and detachment from comfortable mental patterns. But, it can be done, and where undertaken, it will yield a hundred-fold in results. If this present article does nothing more than help to break down the "can't" complex it will be worthwhile.

One of the most needed changes, and one for which we have consistently worked in our system, has been the supplementing of book learning by real life experiences. Language is a man-made tool. Its use and clarity depend upon the image or concept lying behind the symbols. Where the concept is faulty, or inadequate, or where ideas are jumbled, mental confusion results, learnings are impaired, and misconceptions creep in. Bookish facts may be learned glibly—often with little content. Books alone are not sufficient for the enrichment which real education is supposed to furnish. As often as possible, therefore, in our school we use books as supplementary to life itself.

On the basis of observation one is convinced that the majority of our public schools have placed far too great an emphasis upon book facts, and have failed to create valid impressions, appreciations, and

attitudes which contact with a dynamic world may and should supply. Children often leave our schools uneducated in spite of many factual learnings.

Illustrations of our procedures—Our second grade studied foods as supplied by the local community. There is much we want to know about such things, such as the production of milk. Instead of a teacher-directed, textbook-motivated approach, the most logical thing seemed to be to see the place where our supply of milk is centered. We went to the dairy. We saw the cattle and learned the breeds. We saw the foods which the cows ate, and understood the effect of diet upon grades of milk. We learned about government control of weights, inspections, and hygienic requirements. Pasteurization was observed—and even tho seven-year-olds were not expected to understand temperature—they gathered an insight into general processes and an appreciation of methods of preservation and of germ control. The milk was bottled in our presence. Efficiency and time-saving devices were stressed.

Enough learnings were launched by the visit to the dairy to stimulate thought and class discussions for weeks. The class later made a dairy farm. In arithmetic class they learned to draw to scale. They measured the distance from the school to the farm on a car speedometer, and then drew a map on the classroom floor showing the location of the farm, roads, landmarks, and comparative distances. They used one-fourth yard to represent one-half mile. In social studies, all sorts of interesting interpretations developed. Easels gave individuals a chance to express ideas learned with paints and crayons. Wood, tools, paste, and clay supplied other means of harnessing learnings vividly and in ways satisfying to children of this age level. They made cottage cheese, ice cream, butter, junket, and other milk products. These were sold in the lunchroom and proceeds were used to purchase books for a nearby hospital. The children kept their own accounts of sales. They were real business executives! Books, pictures, and slides, all played a part in further learnings, but the impetus was given the initial program by exposure to a real life situation. All of the senses had been able to collect impressions for the safe and accurate recording of learnings which will be apt to remain and integrate into the nervous system. Interest was keen; vividness was at its best. In the stimulating discussions, words meant something. There were true images behind the symbols.

Is such an experience valid? Is it right to spend the taxpayers hard-earned dollars to take children out of the schools into life? I think that it is. I recently heard of a school where the board of edu-

cation refused to allow even nature study hikes during school hours. What a tremendous amount of information the public needs in order to appreciate what education *really* is! What a full-time job school people have, to clear up misconceptions about what is waste and what is gain in school days and school expenses! It is often a case of misunderstanding on the part of the public or of mishandling on the part of school people. Given a sound procedure, a check-up on learnings, a rational carry-over into classroom activities, I believe that trips are one of the greatest aids to teaching that our schools can develop.

All sorts of excursions are possible. The second grade also went to the firehouse, and rode home in the fire truck (thanks to the cooperation of the department). Classroom activities were seething with interest after this trip. We try to have our sub-primary group learn about their immediate environment. Nearby farms are visited. The Palmyra Tacony bridge is nearby. From there the river boats can be seen and there is opportunity for all the interesting songs and stories about boats and bridges. In the block building period, the construction of types of boats and bridges is a natural outgrowth of the first-hand experience. The conference is vitalized by the ability to tell about the things the children have actually seen and heard.

I recently sat in on a conference after the sub-primary group had returned from a trip to the Camden airport. These five-year-olds knew more terminology than I did. In their construction work with the blocks they knew just what equipment was represented. Airdrome, hangar, bi-plane, dirigible, auto-giro, pilot, velocity, and altitude were symbols with adequate concepts behind them. Trips to the railroad terminal accomplish equally valuable results. Once we took the first grade to the Delaware River bridge, and they walked across the foot bridge, to get a good view of the harbor and harbor activities. River dredges supply excellent material and so do all sorts of road construction projects.

Ours is an agricultural community. Winter apples are stored and later exported. Children of the colored school were taken to see the washing, packing, and storage processes. The fourth grade has studied the early settlers of New Jersey. They went to the Friends' meeting-house in the neighborhood. They sat in the " facing-benches," and had someone explain Quaker customs. This group also went to a lodge near the school where a citizen has collected early American furniture and antiques. The study of colonial life was much better understood and appreciated after this exposure to real articles.

In the upper grades many types of reference materials are used to evaluate processes observed. Careful tests of observations are made.

All departments contribute toward the working out of problems which arise as the result of excursions. Reading, arithmetic, manual arts, and dramatics, all have natural application in the program. The trips are usually sponsored by the social studies or science departments, and correlation is worked out with other subjects so as to make an integrated experience. The sixth- and seventh-grade girls have been studying about stars and planets. We plan to take them to the newly opened planetarium at the Franklin Institute, Philadelphia. The fifth grade visited the Camden airport, where they viewed the mechanism of the mail plane and saw a passenger plane arrive from Miami.. Real life experiences! Their developmental values cannot be discounted.

There is no need to enumerate further. The principle is the same regardless of the type of trip. Such excursions have proved of value to our system. They have stimulated interest, made possible a wider range of learnings from actual life situations, and have made classroom learnings integrate with the world of affairs instead of remaining cloistered within classroom walls.

Some difficulties to be surmounted—Can the average public school and the average public school teacher have a share in the program of extending education outside of the classroom? Can contacts be broadened, impressions made more vivid, and learnings made more vital and permanent? I feel sure that they can if teachers and principals believe enough in the modern philosophy.

There are problems to be faced in undertaking such a program. One of them, already mentioned, is the development of a fair point of view in the community toward such a program. This step requires tact, knowledge, and a wholehearted belief in the soundness of the enterprise. It is a slow process, but gradually it can be brought to pass by those who themselves believe that children need enriched opportunities.

Another problem is to provide means of transportation. In closely-knit communities there are many places within walking distance of the school which will provide worthwhile experiences. We use private cars as much as possible. A converted parent is a good asset. Parents seldom accompany a trip, and see the enthusiasm of the children without becoming converted. Often they will say, a bit wistfully, "My, we never had anything like this when we went to school." By making plans well in advance, it is surprising how many people are willing to assist. I think that often schools do not get help from the outside because school people do not make it known that help is de-

sired. Our schools have a way of becoming seclusive. Cooperative enterprise will make our public schools far more human and effective.

The principal's part in progress—At least seven suggestions can be made as to the part the elementary-school principal may play in modification of school programs:

(1) The elementary-school principal must be able to evaluate changes in school programs. He must have knowledge of children and of the laws of learning. He must be able to sort methods, and to utilize those which best apply sound psychology. He must have the scientific attitude.

(2) The elementary-school principal must have a flexible viewpoint. He must learn from his teachers and from his children.

(3) The principal must be a real person in a real world. He must keep his eyes on the world of affairs and not always on pedagogy.

(4) The elementary-school principal must win the confidence of the community by being a real part of it. He must develop the art of "selling" the best educational policies to his community. He must use as his tools not dogmatism and high-flown phrases, but sound common sense and the conviction that the nearest thing to the heart of a parent is the welfare of his child. The principal's job is to prove to the community what really is for the welfare of children.

(5) The elementary-school principal must inculcate in his teachers belief in, and enthusiasm for, the newer technics of education. He can best do this by working *with* the teachers in the promotion of changes required in his school. He should make of his school a little democracy.

(6) The elementary-school principal must never lose sight of the child's point of view. Much of what is unwholesome in our school rigidity will disappear when principals and teachers come to fully realize that "children are like that."

(7) The elementary-school principal must read, study, digest, experiment, exchange ideas with colleagues, closely observe children, and glean opinions from the public—in fact be vigilant to collect any impressions which will help in making him, as a person, a more rounded personality; and as an educator, a more informed and practical administrator. As he develops, teachers and children will catch impetus from the challenge which his growth presents, and they will be willing to believe in and to practise procedures which he has proved valid in the light of sound educational philosophy. The children of America are in need of just such sponsors!

EXCURSIONS IN APPRECIATION IN THE SMALL TOWN SCHOOL

BLANCHE ELLIOTT
Principal, Washington School, Coshocton, Ohio

THIS STORY, like the *Five Little Peppers and How They Grew* might be called, " Small Town Excursions and Where They May Lead." But a trip is not a trip at all until you start from where you are and go some place. Granting that much depends upon the direction taken, the first element is nevertheless the start. Once started you are bound to meet the world.

Our school and community—While the small town school is anywhere east or west, our particular starting point is a new structure opened just before the 1932 Bicentennial Celebration and named the Washington School. It is located on a national highway and serves the outlying district in a system of eight schools. The community is for the most part a neighborhood of pottery workers. There are also in the district some business, professional, and tradespeople.

Our school personnel in the six-grade plan is made up of four well-trained regular teachers. There are no teachers of special subjects and the principal is a full-time teacher with two half-days per month for supervision and extra activities. The janitor, too, is a person—in fact he is three persons for he is also head gardener and chief traffic officer, with the children serving as his helpers.

The most unusual feature of this school situation probably lies in the immense school yard which contains three or four acres which 140 children share and enjoy. It is the development of this yard for safety and beauty which gave the original impetus to some of the excursions about to be described. This school yard, like all Gaul, is divided into three parts: first, the well-kept, untrampled green lawn which fronts the highway, protecting the playground proper from the street; second, the rugged sod and sand playground comprising about three acres; and, third, the bank between, too steep for mowing, yet too erosive for playground. This bank forms the direct background for the school building and is the location for planting dogwood and other native shrubs and plants—the wildflower garden mentioned in this article.

Our purposes—From the very beginning the plans for excursions took definite direction. The highway offered a traffic problem which edged into civic responsibility and the school yard offered a project in beauty development. Then, too, the absence of special teachers left too much humdrum routine without opportunities for enjoyment.

Besides there was a whole-hearted enthusiasm for the new school which needed some outlet of expression.

The desire for an outlet then was a challenge to the children and to the parent-teacher association as well (for a child must have permission to go on a trip). The town had built a new school. In return for the town's interest and expenditures this immediate neighborhood wanted to show some interest in the town's civic enterprises; namely, the library and the museum. With the new school on a national highway, the traffic must slow down and even stop for children crossing the street. Our school, therefore, is a national as well as a local problem. When a driver stopped he looked around. In return for safety thus assured, our school yard needed to be made worth seeing.

Once off to a good start, the idea became popular and there was never any question on the part of the parents as to the obvious educational values. In fact, the last parent seemed to be reached one day when Jack, who was not permitted to go with the fourth-grade group, came in saying: "My dad took my brother and me to the museum Sunday."

While the primary purpose of the trips was the children's pleasure and enjoyment as well as information, the teachers desired to inculcate good habits of civic pride and social responsibility. There was too, the hope that the trips would lead to some constructive projects in the school and, vice versa, that constructive projects would lead to a demand for interesting trips and excursions.

Group trips—During the school year one group trip for each classroom was planned. Group trips in any large number were not considered feasible for two reasons: first, the classrooms were crowded (one can't exactly plow every third row under) so the teacher's responsibility for physical safety and conveyance of large excursion groups is a necessary consideration; and second, the time element needs weighing, as teachers have a full curriculum. School hours must of necessity be used sparingly for long excursions. It may be said for the teachers that they were an enthusiastic group, each originating some particular project that correlated with the trips.

It was to the local museum, one and one-half miles distant, that the group trips were taken for the year under discussion. These were teacher-conducted trips taken during the regular school hours. A group of mothers brought cars and took the primary children, but the older children walked. These trips were organized in response to an invitation, and what is of more social importance than that one respond to an invitation of this kind? The museum curator offered the groups a special display of Indian dolls and Indian basketry.

In connection with the display she gave an interesting talk, explaining the work, in design, color, symbolism, and use. For the older children there was also some local Indian history.

The lecture and display, aside from pure enjoyment, fitted admirably into the school work, in art, literature, song, and history. The certainty of the former existence of Indians was realized all the more keenly by the occasional finding of an arrow-head in the playground sand. That these arrow-heads call forth all the sagacity of the old time trading post was discovered by the writer, who went in search of one a couple of hours after it had been unearthed. Mary had traded it to Ellen for beads, Ellen had exchanged it with Russell for a dime wrist watch, and Russell had traded it to Harry for a pair of leather gloves!

Individual trips—It was the individual trip that played the largest part in the school program. These trips were all taken outside of school hours. They were numerous and varied, yet for the most part centered around definite places and purposes. Also, they were taken by so many pupils, that a common background or group experience could be relied upon. There were, first of all, the trips to the library about one mile away. A large number of children were already regular attendants there, but it was hoped to make this number larger. The teachers brought and read certain interesting books and suggested that the children themselves go to secure books. Certain small groups also went along with the teacher informally after school to obtain library cards. Then came Book Week and the librarian sent a special note inviting the children. This invitation was read in every classroom and the children urged to respond. The letter also asked for a committee of girls who would help in registering guests to the library Friday after school and Saturday. The girls gladly accepted the responsibility and took with them many of their friends.

The fields and the woods of the immediate neighborhood were the centering points for another group of trips. These trips were taken after school and on Saturday. They were taken by individuals or by self-chosen groups sometimes accompanied by fathers, who tho unversed in college algebra, were " old timers " in the field and woods. A number of parents entered whole-heartedly into this project with their children. One father said he went along for safety " because you never can tell when somebody's bull will be turned out to pasture." Whatever the reason, surely the joy of helping to fill certain needs in their children's lives, helped keep up the community morale thru days of unemployment. Aside from pleasure and enjoyment these

trips were made purposeful and associated with school by suggesting that the children bring in native shrubs and wild flowers for the garden on the school ground. These they planted and cared for with the help of the janitor. Inasmuch as the neighborhood is being rapidly absorbed for city property, there seemed no reason why any extraordinary restrictions should be made about the plants collected, altho the National Wild Flower Code was discovered near the end of the spring and is to be considered next year. The wood and field trips enlarged their purpose to include the search for tadpoles, flowers, leaves, and arrow-heads. In a few cases there were visits to local places associated with the early Indians.

A third group of individual excursions seems almost too ordinary to report, yet it had its points very much worth encouraging. These were the trips to homes in the immediate neighborhood for the purpose of sharing pets and toys, and also the civic duty of getting shrubbery for school planting.

Results—A check up of the value of the trips did not call for formal tests and examinations. Even a casual survey of school activities showed a direct influence from the trips. The teachers directing the interests of the children, evolved a number of instructive projects. Each classroom developed a special group project and, besides, there were a number of individual activities and collections.

The following are some of the activities developed directly from the trips:

(1) An outdoor aquarium, by the first grade, consisting of a sunken tub for tadpoles and gold fish. The children brought spades and wheelbarrows, did the digging, and the placing of the stones. They caught the tadpoles and brought them to school with the help of older children.

(2) A school library in the second grade, consisting of a collection of fifteen or twenty books secured from the public library and exchanged every week or two for others. The children took care of the arranging and the handling of the books and were quick to form the browsing habit when other work was done. There were libraries in the other classrooms also, but the second-grade plan was especially well-developed. For this grade too, there was the greatest need for books, as the distance to the public library made it almost inaccessible to the smaller children.

(3) A vegetable and flower garden was another project of the second grade. For this outdoor garden the children brought their own tools and furnished their own seeds. The janitor and upper grade boys helped with the spading.

(4) A school museum developed in the third and fourth grades and assumed rather large proportions. The children obtained from their homes, and from the neighbors, a variety of specimens, which ranged from stuffed birds and animals (some taxidermist must have lived in this community) to a collection of coral, interesting stones, and varieties of coal.

(5) Window gardening represented another third- and fourth-grade endeavor. Boxes of early vegetable plants were raised and transplanted into the home gardens.

(6) Collections seemed to find a stronghold in the fifth and sixth grades. These were both individual and group collections which consisted of arrow-heads, pressed leaves, pressed flowers, and scrapbooks in variety. In a way, these were research projects involving much comparison, identification, tabulation, and recording.

(7) The wild flower garden was a general school project to which some 85 of the 140 children directly contributed as shown by the record kept by the children on the hall bulletin board. This gardening was done almost entirely during the recess periods, at noon, and before school.

(8) A week was given over to pets and another week to toys and sport equipment. The latter, extended to include the whole year, was a direct result of the trips to homes. The pets and toys came to the classrooms and school yard for enjoyment and display.

(9) A lawn beautification project, sponsored by the parent-teacher association, developed. This activity included the sharing of plants from home gardens and gifts of trees from various organizations and clubs of the town, besides the buying of evergreens and other foundation shrubbery.

In addition to the projects named, there was a noticeable appreciation and comprehension of rhythm and color in the art and handiwork. The museum curator in her talk pointed out that Indian design is copied directly from nature and demonstrated as much by abundant specimens. This association is quickly comprehended by the children of a pottery neighborhood, for design and color are parts of the everyday conversation in their homes and are admirably shown in their dinner ware. But the idea of taking design from nature was new to many and the novelty of it appealed. Design took on a larger meaning, as did nature study also.

Conclusion—Even the most ordinary excursion may reveal unexpectedly, not only local, but national and international touches. One national contact was made in response to the children's own clamor. This link was the securing of a weeping willow slip from the tree at Washington's grave. The children took a penny collection (the only money expended for any of the trips or activities) and obtained a slip from the forester at Mount Vernon. This young shoot was planted as a growing symbol of the one whose name honored our school.

It took a newcomer in the community to interpret to the presentday school its own position. He had brought his son to our school and as he stood on the top step looking across the green lawn to the highway he turned to his son and said, "You'll like to come to this school, won't you? It's so pretty and see how everything comes by its way. This place must be the top of the world."

And, of course, it is. The paths lead everywhere. In the words of a modern poet: "The earth is round and anywhere's the top."

EXCURSIONS IN A METROPOLITAN CENTER

DAVID A. WEAVER
Lecturer in Education, College of the City of New York, New York

THE PRESENT EMPHASIS in education is based on children's interests, and aims at an identification of the growing child with the world wherein he lives. Yet the idea, while it has influenced the thinking of many educators, has in practise made but little progress. We have indeed a number of so-called experimental, activity, and project schools, but these schools are generally outside of the organization of public education in the United States.

Teachers report that the causes for the slow progress of the new emphasis in education in our public schools are the organization and administration of public education, particularly in the larger cities. No provision is made for a transformation of the content and methods necessary for activity programs based on the child's interests, and directed toward an identification of the child with the community wherein he lives. The "system," including large classes, is not often compatible with flexibility, informality, and experimentation.

Potential value of the excursion—Obviously it is the problem of teachers in the public school systems, particularly in large metropolitan centers, to find an activity which can serve as a means of transforming the school curriculum from the subjectmatter level to the plane of children's felt interests. The excursion activity undoubtedly is such a means. The journey, if properly conducted, provides for children's purposing, planning, and executing; it gives vital experiences. Excursions can be so planned that they relate to other activities and interests of the children, thus facilitating the effort at making the educative process a process of continuous growth. Furthermore, the tour can become a medium of socializing the individual child, of showing him how his problems and their solutions are dependent and interconnected with the community needs and institutions, and how his community in its turn forms an integral part of the community that is the nation and mankind.

That the excursion is a type activity embodying the basic ideas of reality in education is readily illustrated by the fact that Rousseau considered it a chief method in Emile's education. Emile was to learn his place in nature and in society by moving from place to place, and by engaging in immediate contact with the objects in his environment. The ideas of Rousseau, as is well known, are basic to the contemporary progressive education movement.

Contemporary efforts at creating the new type of school utilized the excursion extensively. Thus, we find Collings organizing a school

program around such activities as: story projects, hand projects, play projects, school projects, and excursion projects.[1] Even earlier, Meriam had employed the excursion as one of the centers for the organizing of school activities.[2]

The above statements are not given for their mere historical interest. They indicate that the excursion is one ready vehicle for the transformation of the old education into the new education. The excursion can constitute a core of vital experience having forward social meaning within the framework of devitalized subjectmatter framework. Perhaps, too, the excursion can give vitality to the traditional subjectmatter curriculum.

In view of the great potentialities of the expedition it is amazing indeed that so little is made of it in the school program. The case of the New York public school system is typical. The response to a question as to the value of the excursion would be overwhelmingly in the affirmative. Yet the use that is actually made of that activity is quite limited. The number of excursions for a particular class depends entirely on the interest of the individual teacher. Some of the excursions conducted in the New York schools are planned with a view of the values and emphasis of the new education; largely they are episodical in nature. A theory of excursions, both for the purpose of facilitating the growth of an intelligently social individual, and for promoting a transformation of the school to a higher level or educational value, is apparently lacking.

A viewpoint on the excursion technic—Two questions are basic to the problem of an intelligent program of school excursions: (1) What shall serve as the basis for the excursion program on the whole? and (2) How shall the individual excursion be planned and executed? These questions must be answered in terms of educational purposes, subjectmatter, and child interests.

Teachers may select for excursions such projects as emerge from the interests of the child. Thus, the arrival of the Graf Zeppelin may precipitate in children an interest in seeing and studying dirigibles. Such a method of selecting and organizing the excursion, namely the purposing of children in projects suggested by current events, has much to recommend it. Such a criterion alone can hardly be the basis for a well-rounded program of excursions. Unaided by some other standard, this idea would lead to a series of episodes rather than a program of visits.

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[1] Collings, Ellsworth. *An Experiment with a Project Curriculum.* New York: Macmillan Co., 1923. p. 47-220.

[2] Meriam, Junius L. *Child Life and the Curriculum.* Yonkers-on-Hudson, New York: World Book Co., 1921. 538 p.

Then again, the teacher may desire to vitalize traditional subjectmatter in the school curriculum by actual experiences. He may take the children to memorable places in connection with the teaching of history, to the local museum in connection with nature study, or to rivers, valleys, and mountains in connection with geography. This method of organization possesses certain advantages. In view of the difficulty of organizing the school curriculum on the basis of vitalized children's experiences, it is obviously desirable that every effort be made to give a living content to the textbook and recitation activities. Such an organizing principle, however, does not afford a dynamic principle for the transformation of the school from what it is to what it should be. Furthermore, the use of the traditional subjectmatter as a point of departure and principle of selection of excursions is not apt, except incidentally, to promote individual growth and social intelligence on the part of the child.

The writer, therefore, is committed in his thinking, to the employment of an educational end or value as to criterion for the selection and organization of an excursion program. The educational value he has in mind is *the acquaintance with those activities that are basic to the life of the community, and its interconnections with the outside world; sensitiveness to the social problems that emerge in the process of social living.* An excursion curriculum organized around this educational value is suggested. The excursion curriculum should cover the various aspects of community life. How does the city get its water? Are all members of the community equally comfortable? If not, what is the range of differences?

It is by no means suggested that the children's interests should play no part in the selection of excursion projects. In fact, the project that is to be engaged in at any particular time is to conform to the children's interests and purposes at that time. The children's interests, however, are to be only one of the focuses of the excursion program. The educational criterion above referred to should constitute the other focus. The teacher, as a member of the group, should, as far as possible, guide the selection of the excursions and their conduct, so that for the most part they are calculated to the attainment of the objectives of social sensitiveness and social intelligence.

Furthermore, while it is here suggested that these values, and not traditional subjectmatter, be the selective principles in the organization of an excursion curriculum, it is by no means indicated that the excursion projects be insulated from such subjectmatter. On the contrary, it is advisable to utilize interests aroused in discussion of subjectmatter in the decision of any particular project and, on the

other hand, to employ experiences gained in the course of a trip to enrich other school work.

A specific illustration—The concrete life of the community, and not traditional subjectmatter, constitutes the framework of the excursion curriculum.[3] To illustrate, a tentative excursion curriculum follows:

(1) How do people on various social and economic levels live?
  (a) The richer residential sections of the city; i.e., Park Avenue, Fifth Avenue, Riverside Drive, and Central Park West
  (b) The poor residential sections of the town; i.e., Lower East Side
  (c) The wealthy hotels; i.e., Waldorf Astoria
  (d) The breadlines.
(2) How can housing for the poor be improved?
  (a) The Lavanbury Houses
  (b) Cooperative houses.
(3) What are the racial and religious groupings of the community?
  (a) Little Italy, Little Russia, Harlem, China Town, and Yorkville
  (b) Temple Emmanuel, and East Side Synagogue, the Cathedral of St. John the Divine, St. Patrick's Cathedral, and Riverside Church.
(4) How does the city get its power?
  (a) A large power plant.
(5) How do people make a living?
  (a) The garment center
  (b) Wall Street
  (c) A metal manufacturing firm.
(6) How and where do people get their life necessities?
  (a) A dairy farm
  (b) A bottling plant
  (c) A bakery
  (d) A clothing factory
  (e) A department store
  (f) A freight depot
  (g) A trucking corporation.
(7) How do people travel to places?
  (a) Subway and surface cars
  (b) A ferry
  (c) Bridges
  (d) Automobile assembly plant.
(8) How do people communicate?
  (a) A telephone exchange
  (b) The central post-office
  (c) A central telegraph office
  (d) A radio station.
(9) How are people informed about events?
  (a) The city room of a large newspaper.
(10) How do people govern themselves?
  (a) A political rally
  (b) A meeting of a legislative body.
(11) How are people protected?
  (a) The police department
  (b) A magistrate's court
  (c) A fire station
  (d) The street cleaning department.

[3] In this illustration the opportunities in New York City are used. Similar examples can be found in every community.

(12) How do people enrich their lives?
  (a) A recreational center
  (b) A public library
  (c) The theater section
  (d) A museum
  (e) A radio broadcasting studio.
(13) How does a particular community exchange products with the outside world?
  (a) A railroad depot
  (b) A steamship dock
  (c) An airport.
(14) How do people work towards another social order?
  (a) A meeting of a party aiming at social reconstruction
  (b) Symposia, debates, and discussions.

Method of conducting excursions—The suggestion that the excursion can be utilized both as a core and method of conducting excursions of the new education within the framework of the old, and as a medium of transition from the educative processes based on traditional subjectmatter to an educative process based on the child's interests and experiences, has, of course, definite implications for the method of conducting excursions. These implications have already been hinted at above. In brief, the method should allow for the purposing, planning, and executing of the excursion project by the pupils, as well as for criticism of the results obtained.

For the purpose of realizing the aims of the excursion project as here set forth, it is essential that individual trip projects represent the purpose of the pupils rather than that of the teacher alone. Group unity can be arrived at thru conferences. Conferences should not be limited to a discussion of where to go. To derive the maximum educational value from such an excursion, it is necessary that the children discuss and define the questions for which the answer is to be sought. Where desirable, the group may appoint a committee to make a preliminary investigation. The collection of a bibliography, and preliminary reading might also be decided upon by the group. Such procedure in the selection and the planning of an excursion is an excellent means of habituation in group purposing, planning, and living. In the course of such planning, the children will be confronted by real moral problems. In their solution children will acquire moral sensibilities, habits, attitudes, and ideals. In planning the project, there is considerable room for the introduction of the subjectmatter learned in the class. Computing the costs of the trip affords an excellent plan for a review of knowledges and the acquisition of new ones. Mapping out the trip affords opportunities for reading historical, geographical, and other types of material. It is precisely here that a teacher's function enters. The teacher, as a member of the group, and not as its master, should endeavor to raise the plane of selection

and planning by introducing in these procedures elements from the cultural heritage of the race.

The execution of the project should be left to the children as far as possible. It is only when the children are left to test ideas that they acquire a knowledge of their validity and meaning. An expedition project that does not involve the conferences in which the results of the trip, information acquired in its course, and the bearing of such information upon the questions to which an answer was sought, as well as the formulation of new questions arising from broadening experience, constitutes a project not fully carried out. The value of an excursion is not so much the acquisition of specific information as the raising of new problems.

Summary—The metropolitan centers have much that should be utilized in school activities. The curriculum should embrace the institutions in the community of which the school is a part. Every metropolitan center has valuable educational material within easy reach of the school, which at present, is not usually considered in the educational scheme.

There is a ray of hope for progress in this direction, which is portrayed by the more progressive schools whose curriculums embrace life. The task which still remains is a challenge to those courageous souls who are looking to the dawn of a better tomorrow.

BY FIVE YEARS OF AGE, however, the children are ready to be farther afield on school trips. Their block play usually reflects an interest in automobiles, boats, and trains; and following these leads we go often—about once a week in good weather—to nearby docks to watch coal being unloaded from barges onto trucks; or again to railroad freight yards to watch the handling of food supplies. . . . .—Stott, Leila V., *Progressive Education*, April, 1931, p. 335.

A SCHOOL JOURNEY TO THE BEACH

SYBIL L. DANIELS
Teacher, Paul Revere School, Revere, Massachusetts

A TRIP to the beach always appeals to the children and provides a teacher with new and interesting subjects around which valuable lessons may be arranged. The specimens found are concrete material which serve as a medium for securing a high degree of interest that will carry over into many later experiences.

The class—The journey was planned as a nature study lesson for an adjustment class of eighteen pupils. The group was made up of boys and girls varying in chronological age from twelve to seventeen years. All had been retarded two, three, or four years and their mental ages ranged between eight and twelve. With intelligence quotients below 80, fifteen of the class proved to be slow but willing workers tho easily disturbed by slight irregularities. Two boys with a higher degree of intelligence were transferred from regular classes because of the disciplinary problems they presented and one pupil came from a reform school. My work, as teacher of this class, was to recognize individual needs and to develop the children along these lines, to help them attain regulation standard. Character training for good citizenship was of prime importance.

The plans take form—An out-of-door lesson needs to be carefully planned by the teacher. When outside there are many more chances for interruption and distraction than in the schoolroom, and the instructor must be ready to meet any situation which arises. On the day preceding the time scheduled for nature study, I went alone to go over the ground and to make very definite plans. Considering the time element as well as the subject, I decided just how far along the beach the class could go. The sea gull was to be the special subject for study. In order to stimulate keen and accurate observation, I prepared a series of questions calling attention to size, color, markings, places seen, manner of flying, song or call note, shape of bill, shape of tail, food, and how the food is obtained. This work was to be done during the last period of the day so that if a few extra minutes were needed they would be available. However, I expected to return to the school at dismissal time so that no parents would be alarmed by the non-appearance of son or daughter.

After being carefully organized this plan was dependent upon two factors: first, fair or pleasant weather; and second, the presence of sea gulls. Because of the possibility of these varying conditions it was also necessary to plan an indoor lesson in case of rain; and to

be prepared to give in an interesting manner, information about the various things which we might find on the beach. I then considered the plan ready to put into operation.

The suggestion of studying out in the sunshine that warm spring day aroused much interest and enthusiasm. In a preliminary discussion we considered proper conduct on the street; the work of the field trip, and the questions needed to assist in making definite observations of the sea gulls.

All went well during the seven-minute hike but upon our arrival we found the tide high, and the sea gulls, usually so numerous, were nowhere to be seen. The carefully planned lesson was impossible and the secondary scheme had to be substituted.

New plans made with the children—"Must we go right back?" the children asked with a tone of disappointment. In reply, I sent the boys and girls scampering along the water's edge in search of subjects for study. Each one was instructed to get something within a given time and return to me on signal. A few minutes of diligent searching on their part provided much of interest and value.

Many forms of sea life were brought back, identified, and discussed. Perhaps most interesting was one trophy entirely new to the children, the Irish sea moss, or carrageen, which had been washed ashore in large quantities during a heavy storm. This moss is a red alga, a low form of plant life which grows on the rocks below the sea level. It is common in the Irish Sea, but also grows on rocks just off Nahant as well as other places along the shore of Massachusetts. At Hingham, it is gathered for commercial purposes. During heavy storms it is torn from the rocks by the lashing and beating of the waves. When growing in deep water it is of a dark purplish red but in the shallow tide pools the color is lighter and the plant somewhat stunted. Bleaching is produced by exposure to air and sunlight and so we may find the moss in all shades varying from its natural hue to white. Like many other sea weeds it is used in the preparation of fertilizer but it is also edible and may be employed in cooking. During my explanation I mentioned the fact that many times I had gathered Irish moss for use in making the tasty dessert or pudding called blanc-mange. This idea appealed to the children and it was amusing to see the hands and pockets full of sea moss as we started home. Many questions were asked and after an explanation of the very simple method of preparation it was suggested that we request the domestic science teacher to instruct the girls in making blanc-mange. She had never used sea moss but was willing to undertake the experiment.[1]

[1] The writer acknowledges the generous cooperation of Jennie Dickson, teacher of domestic science, and Rosa A. Yeomans, principal of the school.

Experience extends—The following day was a busy one. The girls made the blanc-mange and as soon as they returned to the home-room the boys showed a keen interest in the new dessert and solicited information as to how it was made. The time seemed favorable for a rather informal period of oral expression and it was remarkable to note the ease and enthusiasm which characterized the explanation. Dictionaries, encyclopedias, and nature books were consulted eagerly for information about Irish moss and blanc-mange. A study of the derivation of the latter word aroused a similar interest in other words.

The third day proved still more interesting. The pudding was ready to serve and the boys received an invitation to a " blanc-mange party " after school. This event gave an opportunity for an effective lesson in courtesy and an incentive for noticeable improvement in personal appearance, especially among the more careless boys. After a seemingly long afternoon the appointed hour arrived and a most excited group was welcomed by the domestic science teacher. Our principal told the boys and girls a story. Then followed refreshments of blanc-mange and pineapple, served by the girls. Everyone thoroly enjoyed the party and expressed his appreciation before leaving. I was happily surprised by the dignity and courtesy with which all conducted themselves.

What fun we had experienced with our nature study, hike, discussions, research, cooking, and party! Our principal had been interested in the activities but had not heard the entire story from beginning to end. Therefore, during the English period, the next morning we undertook the writing of a complete account for her. It was interesting to note the variety of style: compositions, diaries, and letters. All expressed appreciation of the good times as well as of the interesting information gained in their out-of-door classroom. Thus we brought to a close an exceedingly interesting series of activities which began as the children ran along the beach in search of material for nature study.

Outcomes of this unit of work—The beach journey could not be carried out as originally planned but one incident led to another until many worthwhile experiences had been gained. The points of value from the lessons seem to be as follows:

(1) Proper conduct on the street
(2) Making the best of what we had (when sea gulls were missing)
(3) Observation and collection of specimens
(4) Information about various specimens
(5) Information about Irish sea moss
(6) Value of this particular product of the beach
(7) Arousing of curiosity in regard to sea moss
(8) Preparation of a wholesome food

(9) Motivation of oral expression
(10) Use of dictionary and reference books
(11) Plans for a party
(12) Invitation to the party
(13) Accepting the invitation
(14) Improvement in personal appearance
(15) Attending the party
(16) Serving refreshments
(17) Expressing appreciation to the hostess
(18) Writing accounts of the whole experience
(19) Relation between school work and out-of-school problems
(20) Desire to help one another
(21) Proper social relationships in various situations
(22) Improved pupil-teacher relationships.

An interesting incident occurred just a few days later when one boy, who, at times, had seemed a most difficult disciplinary problem, asked to go out to the playground to see a nest of baby snakes. Of course I was interested, but since it was then time for classes to begin we agreed to go at the close of school. Two hours later, when in search of the snake family, we removed a rock but found only a bit of bare ground. The snakes were gone. The boy calmly said, " I was afraid they'd be gone and I wanted to be sure you saw one, so I've kept it in my pocket all the afternoon." We looked at the baby milk snake quite carefully. Then he gently let it go and added, " I would have shown it to you in school but thought I'd better not before the other children." I felt more than grateful for this attitude of cooperation which he had shown and, having thus won his confidence, I found him no longer a disciplinary problem.

One thing just leads to another when we start teaching nature study out-of-doors and our " journey to the beach " proved to be decidedly educational as well as most enjoyable to all concerned.

CONCRETE IMAGERY is fundamental to clear geographic thinking. If from the beginning the child is given concrete images in the way of real landscapes or of landscape photographs upon which to base his reasoning, he soon proves that he can do a high type of thinking of a geographical nature.—Blood, Benita R. and Kaasa, Elizabeth J., see p. 204 of this yearbook.

CONCERT MUSIC TO WIDEN EXPERIENCES

RUSSELL V. MORGAN
Director of Music, Public Schools, Cleveland, Ohio

INCREASING thought is being given to the problem of bringing children into contact with music beautifully presented by artists who understand the child attitude. The music program of tradition concerned itself almost wholly with training intended to give the child power to read music at sight and to sing a limited repertoire of songs especially written for children. As music has been a subject in American schools for one hundred years, we find this tradition difficult to break. Nevertheless, considerable progress has been made in the last few years in liberalizing the program, even to the place of introducing new purposes, materials, and activities. One new phase highly significant is that of concerts and recitals designed for children.

Types of concerts—Concerts for children fall into two divisions: first, programs presented within the individual schools by soloists and small artist ensembles; and second, performances given by large professional groups such as choral organizations and symphony orchestras, housed in a central hall with the boys and girls gathered in from various schools. Each type of activity mentioned above is valuable but it is obvious that many communities are not in position to offer fine orchestral concerts. It is possible, however, for many schools to present a well-thought-out series of concerts by excellent soloists and small ensembles.

The purpose of these programs—In the writer's judgment, there are two highly important purposes for concerts. In the first place the children come into contact with a vastly wider field of musical literature, and in the second instance they hear a performance possessing artistic qualities of a high order.

If musical experience is to be confined to songs that boys and girls can sing in the classroom, two weaknesses are apparent immediately. There are many songs which students may enjoy and appreciate that possess technical difficulties too great for mastery in performance. A great wealth of musical stimulation is denied the child who may hear only those songs which he himself can sing. Then too, the whole library of instrumental music is closed to him.

The loveliness of music cannot be realized by most of us except thru the interpretation of a fine artist. After all, notation is a mere suggestion of the musical idea and accurate reproduction of the indicated duration and pitch does not mean that we reproduce the

music. As we hear a beautiful interpretation we become increasingly sensitive to enriched musical values. These values cannot be expressed in words or in musical notation but, nevertheless, constitute the reality of the art. It is experiencing the beauty in music that stimulates and quickens our own musical imagination to the point where we can discern more clearly the esthetic qualities in any composition. Many of us can testify to the increased awareness of musical beauties that follows the hearing of a superb artist.

So then, we may consider the concert as a musical excursion or perhaps a laboratory, where we may glimpse a realm of beauty which up to this time was totally unknown to us. The value of these performances lies in their capacity to increase our sensitivity to esthetic qualities and to stimulate our search thru and beyond mere musical notation to the true musical expression.

The material must be of high quality—Boys and girls have an uncanny sense for detecting shoddy and meaningless things in art. They also sense and respect beauty even in compositions that in some ways seem too complicated or subtle for them. Occasionally, well-meaning people point out the fact that certain numbers have implications that are over the heads of young people. Perfectly true but so long as musical beauty is present in abundance, there is every reason to feel justified in using such music. Our fault in this field is usually to aim too low rather than too high. After all, truly great art has a directness and simplicity that captures children. Our problem here is not so much over-reaching in the selection of material as it is failure to provide a truly adequate and artistic performance.

Preparation for the concert is essential—A tragic mistake of earlier years was in forcing children to sit thru a concert for which they were in no way prepared. Even the trained music critic confesses that his first hearing of many compositions results in confused impressions. Music possesses highly organized form and structure but this is not apparent until musical memory has been developed to the point of retaining at least some comprehension of the composition as a whole. A part of the preparation for a concert should be the careful listening to phonograph recordings of as much of the material as is available.

It is worthwhile to know something of the human side of the composer. Our feeling towards his music seems warmer if we think of him as one of us. Then we should know something of the story of the music, if it has a story, and some realization of the form or structure in order that it be intelligible to us. But, above all, insist upon sufficient hearing of the phonograph record so that the concert per-

formance will give the children the feeling of welcoming an old friend. This preliminary preparation serves its purpose, and that is more than can be said of the verbose and endless "explanatory" remarks which so many artists feel they must make during the presentation of musical program for children.

To function properly, the preparation periods and the concert must integrate with music class work. Too often a feeling prevails that the concert is totally unconnected with the school curriculum and the stimulation, that should be carried back to the classroom and express itself in deeper musical feeling, is lacking. Proper and thoro preparation causes the concert to be a thrilling occasion. In turn the concert should result in a strong desire on the part of the children to express some of this same musical beauty in the songs of their own classrooms.

THERE IS NOTHING NEW in the idea of visiting classes. The image brought to mind is that of a line of children transported by some means to a city museum or park. Usually, there follows the conducted visit with its variable impression of information on the pupils. Since the teacher must put in a great deal of effort and thought, the results from such visits should be educationally worthwhile. All of us, who are interested in education, realize the value of utilizing the visual aids of outside institutions for the enrichment of class topics.—Shaw, Ellen E., 1932 Yearbook, p. 476.

A STUDY OF THE VALUES OF FIELD TRIPS

R. H. PRICE
Principal, Junior High School, State Teachers College, Whitewater, Wisconsin

IN THE SPRING of 1932 replies to a questionnaire were received from the principals of 268 public elementary schools scattered thruout forty-five states and the District of Columbia. One part of this questionnaire dealt with the extent to which public elementary schools were participating in excursions or field-study trips; the types of places to which such trips were taken; the time of taking trips; and the value of such activities in the opinions of the principals of the schools.

Number and type of field trips—There is shown in Table 1 the percentages of the 268 schools from which trips were taken to ten different types of places. Six- and eight-grade schools are shown separately.

TABLE 1—TRIPS TAKEN IN 268 SIX- AND EIGHT-GRADE ELEMENTARY SCHOOLS

Types of places	146 Six-grade schools Percent	122 Eight-grade schools Percent
To civic buildings	36.9	34.4
To rural industries	28.1	18.8
To urban industries	36.3	31.1
To parks	43.8	32.0
To museums	37.6	41.8
To libraries	41.1	32.4
To newspapers	15.2	13.6
To banks	9.4	8.6
To commercial offices	3.8	2.6
To higher schools	20.0	20.0

From Table 1 it may be observed that a considerable number of unselected schools are utilizing trips as a means of enriching the experiences of children. With the exception of trips to museums and to higher schools, the six-grade schools seem to be carrying on this type of activity more frequently than the eight-grade schools.

In order to determine the opinions of the principals as to the value placed upon trips they were asked to indicate whether they considered trips of high value, of medium value, of low value, or of no value. The results obtained in terms of percentages are shown in Table 2.

From Table 2 it can be seen that a large majority of the principals, from whose schools trips are taken, consider them of high value. A few consider trips of medium value but it is interesting to note that none of the replies rated them of low or of no value.

The number of trips taken by the schools is also of interest. The figures quoted are for the 1931-32 school year. The average number of trips taken to civic buildings by schools reporting was five; the average number to rural industries was three; the average number to parks was five; the average number to urban industries was three; the average number to museums was four; the average number to libraries was four; and the average number to newspapers, banks, commercial offices, and higher schools was one. Since many of the schools reporting were of the type in which trips are most likely to occur, it is evident that only a small percentage of elementary-school children are getting any contact with the outside world under the guidance of teachers.

TABLE 2—VALUE OF TRIPS AS INDICATED BY 268 ELEMENTARY-SCHOOL PRINCIPALS

Types of places	Percent reporting			
	High value	Medium value	Low value	No value
To civic buildings	76.4	23.6	0	0
To rural industries	84.2	15.8	0	0
To urban industries	80.5	19.5	0	0
To parks	59.1	40.9	0	0
To museums	84.3	15.7	0	0
To libraries	86.9	13.1	0	0
To newspapers	83.4	16.6	0	0
To banks	81.2	18.8	0	0
To commercial offices	81.0	19.0	0	0
To higher schools	80.0	20.0	0	0

In addition to the types of places listed in Tables 1 and 2, many other places were mentioned by one or two schools. Among these were trips to airports, ship yards, submarines, nurseries, special types of gardens, flower shows, dunes, hotels, observatories, markets, historic spots, art exhibits, and Indian villages. The variety of places to which trips are being made seems to be almost unlimited.

The time at which trips are taken may give some indication of their significance in the program of the school. In 53.1 percent of the cases reporting, the trips were taken only during school hours. In 4.8 percent of the cases they were taken only after school hours. In 42.1 percent of the cases trips were taken both during school and after school. These percentages indicate that in most of the schools in which trips are taken they are considered a regular part of the school program and not an extracurriculum activity. One school reported that trips are taken entirely on Saturday mornings.

Values of field trips—As the writer sees the problem there are at least five distinct values in trips which the elementary school cannot afford to overlook.

(1) Trips provide a means of enriching the experiences of the pupils. By trips to civic buildings, to rural industries, to urban industries, to newspapers, to banks, and to commercial offices, boys and girls have an opportunity to become acquainted with the work of the world. Superficial as this contact may be it is better than no contact at all. Trips to museums, to libraries, and to higher schools give pupils some contact with educational opportunities beyond their own school. Many pupils leave elementary school without any conception of the educational opportunities which lie ahead in other schools or in agencies outside the school. One of the problems of the elementary school is to help pupils attain some conception of how education may be continued both in other schools and thru other agencies.

(2) Trips provide experiences out of which school activities become more meaningful. For too long the school activities of children have been isolated from the outside world. Trips are one means of bringing the outside world into the school and of taking the school into the world. Thru this contact with the activities of the world, reading, writing, spelling, arithmetic, science, history, geography, and all other subjects of the elementary-school curriculum may take on life and become more meaningful to children.

(3) Trips provide an opportunity for children to explore the world about them and to broaden their interests under expert teacher guidance. A trip to a park, to the beach, to the woods, to the city hall, or to a factory, with a skilful teacher will help children to see and to understand their environment. Such trips without the guidance of a good teacher are often meaningless. Sometimes direct instruction may be used on trips but usually the method is one of skilful guidance where individual interests and aptitudes are allowed to play an important part.

(4) Trips are a source of information for children, information directly obtained. Seeing a thing first-hand, hearing the noises of the machinery, feeling the heat of the furnaces, and smelling the odors of the plants is quite a different proposition from reading about them or seeing still or moving pictures of them. Appreciations and attitudes are built up thru direct contacts that cannot be attained in any other way. Moreover, thru trips children can be guided into sensing the value of obtaining information directly thru first-hand contact with situations. There is no substitute for such methods.

(5) In making trips there is always a real opportunity for choosing, purposing, planning, executing, and evaluating on the part of the pupils. Often there is an opportunity to choose between several trips, in which choice the purpose of the trip must be considered.

Always, there is present the opportunity for planning the trip, carrying it thru, and evaluating it from many angles. Excursions are not artificial but are real experiences. It is in connection with real experiences that children are able to choose, to purpose, to plan, to execute, and to evaluate with some realization of what is happening.

Conclusion—It should be added that the preceding statements are based purely on observation, on experience in taking children on trips, and on a reflective consideration of the values of such activities. Very little data of scientific standing are available concerning the educational value of trips of any sort. Such research studies are awaited with interest by all concerned with elementary education.

Until more definite evidence that the time spent on trips is of equal value with the time spent in the schoolroom is available, many principals and teachers will hesitate to give them their sanction. The dangers of accidents on such expeditions, the expense involved in many of them, and the critical attitudes of their communities will continue to cause many classes to remain exclusively in the schoolroom.

In addition there is to be considered the attitude of the management of the places which are visited. If all classes in our schools made even one visit each month, industry, business, and other non-school agencies might consider their enterprises overrun with school children. As yet, there seems to have been comparatively little difficulty with this problem because of the small number of trips attempted in any one community. But the problem might become acute unless the non-school agencies of society begin to feel that they should have a part in the education of the oncoming generation. That feeling is not very widespread at present.

TRAINING PROGRAMS have pointed attention to the real business of the principal as that of helping to improve instruction. Intelligent use of a great number of aids will make a fine school. The aids described in this yearbook do not replace the other means of teaching. They enrich the whole teaching program.—Cody, Frank, see p. 143 of this yearbook.

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CHAPTER VI

SLIDES, STILL FILMS, AND OPAQUE PROJECTION

EDITORIAL COMMENT

THERE IS SOMETHING fascinating about slides projected on a screen. The darkness of the room and the darting shaft of light combine to spread before us a thousand facts and fancies. We recall the thrills and rapt attention of our " magic lantern " days. This inherent characteristic of holding the attention, together with the adaptability of the slide to many uses, has made the still-picture projector a useful aid to teaching.

Fortunately for education the projector has made marvelous advances since the " magic lantern " days. The improvement of the illumination, the simplicity of operation, and the development of daylight screens have made the slide projector easily accessible for classroom use. With the improvement of the mechanical aspects has come the development of many fine classroom procedures, a few of which are described in this chapter.

The first contributor briefly reviews a number of the available types of projectors and discusses some of the advantages of each. Another article tells of the points to be observed by the teacher who wishes to use the lantern slide with dispatch and effectiveness. Two articles tell how to prepare teacher-made and pupil-made slides revealing the possibilities of great individual and group development. One article presents the advantages of the opaque projector—a type which has perhaps lagged behind the mechanical and educational development of the slide projector.

The Editorial Committee regrets that articles of high quality were not received on the use of still films. This type of equipment is essentially the same as the slide projector except that the material is made on rolls of standard motion picture film instead of glass slides. Observation shows that the still film is used with success in various schools—altho its adoption has probably been more limited than in the case of the lantern slide. It is to be hoped that at some future date the developments in this field may be made available thru the publications of the Department. Certainly those persons who have already made notable progress in developing economical and simple equipment, and in preparing film-libraries in various fields, should have the opportunity to present their work.

It is believed that many principals will wish to pursue the possibilities of still-picture projection by reading the references cited at the end of the chapter.—*Editorial Committee.*

TYPES AND USES OF PROJECTORS

W. F. BARR
Dean, College of Education, Drake University, Des Moines, Iowa

WHILE PROJECTION EQUIPMENT properly includes projectors themselves and accessories, it is the intention here to give only such consideration to accessories as is necessary to emphasize what is said about projectors.

Lantern—The lantern is the most important single piece of projection equipment because it is simple in its construction and easy to operate and because it can be used as the base unit for attachments for the film slide, the still film, and microscopic slides.

The lantern at the end of the last century was used very little for educational purposes. It was so clumsy and so difficult to operate that even those who were most enthusiastic about its educational possibilities found little opportunity to use it in the classroom. With the growing realization on the part of the teacher that more and more must be done to give something of reality to children's school work, pictures came to play a large part in the teaching process. It was inevitable that ways should be found to present pictures of educational value to class groups.

Representatives of organizations furnishing school supplies, actuated by the desire to make more money or the desire to aid the cause of education without reference to the financial return, gave more or less enthusiastic aid and new types of lantern with new attachments began to appear. Cooperation between teachers and manufacturers is revolutionizing the lantern. Already we have the classroom lantern, light of weight and easy of adjustment, that can be used in any schoolroom under normal light conditions by any teacher or by any intelligent pupil of nine or ten years of age. A late form of the classroom lantern is the lecture desk lantern, which makes it possible for the teacher to stand back of the desk, facing the class, while operating the lantern and explaining. For purely classroom use, this lantern heads the list.

When schools begin to buy lanterns as they buy reference books, they will buy for special, not for general purposes. No school now buys for its library a combined cyclopedia, dictionary, history, and atlas. Efforts have been made to popularize such reference book combinations, but without success. When we need a dictionary we want a dictionary, so with a cyclopedia, and so with an atlas. The same is true with a projector. If it is class work that is wanted we must have something adapted to that type of work. If it is a large lecture room projection then the lantern should be of a type adapted to

the lecture room with an operator apart from the lecturer. This type of lantern was the first developed. Its improvement has been rapid and it has now reached that stage approximating perfection which gives it a deserved popularity with both schools and churches. It can be used effectively in the classroom, but is not so convenient as the lecture desk lantern and for classroom work should be displaced by the latter.

The possibilities of the lantern have been greatly increased with the use of cover glass and etched glass slide making, and with the discovery of the possibilities of slides made by simply placing a kodak film between two pieces of cover glass.

Film slide projector—This simple piece of apparatus is handled easily by any teacher or any fifth-grade child. The film slide projector is small and compact, so that it is carried about easily. Since it can be fitted with a lens of short focal length, it makes film slide pictures available for classroom, conference room, home, and office. For larger rooms the film slide projector is not so satisfactory as the lantern attachment. When the film slide is to be used in a large room it is best to use a lantern with attachment. In this combination the distance between the film and the lamp is much greater than in the film slide projector and, therefore, it is possible to use a lamp giving a much more intense light with no danger of damage to the film. Since for ordinary classroom use the attachment is as effective as, or more effective than the projector, and since it costs about one-third as much, the school wishing to use both glass slides and film slides, and wishing to get the most equipment for its money will do well to buy the lantern with the attachment, instead of both lantern and film slide projector, unless both kinds of slides are to be used at the same time.

Micro-attachment—The micro-attachment of low power may be used on the ordinary lantern, making possible the use of micro-slides instead of lantern slides. It is also possible to combine the lantern and the microscope so as to make practically one instrument of the two.

Still film projector—The still film is but another kind of lantern slide. It can be shown with any lantern by using an attachment that any school can purchase for a few dollars.

Opaque projector—This instrument is for the projection of pictures having opaque backgrounds. Photographs, postcards, pictures and pages from books, manuscripts in longhand or typed, surfaces of minerals or specimens or pieces of wood; anything that can be

adjusted to the opening of the particular projector may be shown. This projector is recommended chiefly by the fact that there is so much available material at no cost and so much more at low cost. It may be had with lantern combination and the lantern part can be fitted with both film slide and micro-attachments, but it is usually much more satisfactory to use these attachments with the lantern as a unit separate from the opaque projector.

Motion picture projector—Progress made by the manufacturers of motion picture equipment (projectors and films) has been so rapid that the educational world has not been able to keep pace with it. While we were trying to get our schools equipped with 35 mm. motion picture outfits for the use of silent films, and while we were trying to get producers to make silent films of educational value, the 16 mm. equipment came into existence and soon passed from the toy stage to that of a very practical type of school apparatus.

The size of the 16 mm. projector makes it much more readily adaptable to classroom work than the 35 mm. The fact that films can be secured for this projector at a much lower price than for the 35 mm. gives it a distinct advantage to schools. Anybody can take a 16 mm. motion picture camera and photograph objects and activities of interest, thus producing film at small cost, thereby adding still further to the value of the 16 mm. equipment. The fact that experimentation in any field can be carried on with this type of machine also increases its value. It seems that the 16 mm. motion picture projector should play an important part in the educational work of the future.

Sound equipment—Just as we were beginning to adjust ourselves to the possibilities of the 16 mm. equipment, sound pictures began to bid for a place in the schools. The only certainly successful sound-on-film is in the 35 mm. field. The 35 mm. equipment is as yet too cumbersome for classroom work, so that at present it seems that the school use of 35 mm. sound equipment must be limited to the auditorium.

The educational use of the 35 mm. sound equipment is further handicapped by the limited number of films available, and by the expense of those that are to be had.

The limitations of the 16 mm. sound equipment are such as to make its use in classroom work unsatisfactory. While it is not so heavy as the 35 mm. equipment, it is still inconvenient to handle. The use of a rotating disc for the sound while the picture is recorded on a film makes it necessary that the operator have some skill in

synchronization. The older the film becomes the more difficult the problem of synchronization becomes.

Sound-on-film—Manufacturers of 16 mm. equipment are working on the problem of producing 16 mm. sound-on-film projectors and films. While a certain degree of success has been reached, it is not yet certain how satisfactory this will be, and it seems that the only suggestion one is justified in making is that institutions having a limited amount of money should wait until it is more certain that the equipment will be successful. Institutions that have money enough with which to experiment may well cooperate with the producers in the endeavor to see what can be done with this type of equipment. The chief advantage of the 16 mm. sound equipment over the 35 mm. sound equipment is, of course, that it is more economical and that it is in a measure more easily handled. The place of sound pictures in classroom instruction is still problematical. It seems that schools desiring to use sound equipment for instructional purposes will find it desirable to have special rooms set apart for the use of the equipment, moving classes to these rooms as to any other laboratories. The acoustics of the room is very important and since it cannot be adjusted in each classroom, the special room where adjustments have been made is necessary for the best sound results.

Equipment too expensive—All kinds of projection equipment are too expensive. If those who are interested in visual education can induce manufacturers of projectors to produce standard, easily handled, and easily adjusted equipment at about one-half the present cost, we may reasonably expect to be able to introduce it generally into the schools. At present prices any attempt to furnish schools with the number of projectors they should have is destined to failure. Every classroom should have certain projection apparatus, just as it has certain recent books, and the first step towards equipping the classrooms as indicated here must be taken by the producers of the equipment, upon the assurance, of course, of proper cooperation from those who must be the users of the equipment.

Purchasing equipment—Unfortunately, in this field, as in every other, there are those whose sole interest is in possible financial returns, therefore we have cheap equipment, cheap pictures, and high-pressure salesmen. This situation temporarily hurts the entire movement. Schools, churches, and other organizations desiring to buy equipment should see that the purchasing power is placed in the hands of competent persons who have all of the necessary information as to the use to which the equipment is to be put. It is only

by doing something of this kind that the purchase of the absolutely best type of equipment can be guaranteed and the best results obtained.

Teacher training—Teachers must be trained in the use of equipment and in its possibilities. When a school has supplied itself with equipment it will be very easy for someone in the corps of teachers or someone brought in from the outside to give instruction in the handling of equipment to all of the teachers in a very few short lessons. It is not desirable to tell the teacher all of the things that can be done with any piece of equipment such as the lantern. It is, however, essential that emphasis should be laid upon the desirability of using visual equipment in the same easy casual manner that reference books are used, so that the educational element may take the place of the show element.

If the teacher knows how to handle the equipment and is anxious to get the most possible out of his lessons and out of the material available for instruction, she will shortly discover many ways in which it can be used. There is nothing at present in the field of teaching equipment that offers greater opportunity for use of initiative on the part of the teacher than the lantern and its various attachments.

ONE OF THE GOALS of education, we are told, is the worthy use of leisure time. The school is trying to teach, thru participation, those things which are to carry over into life, and it is interesting to see how far school life is functioning toward that goal on Saturday and Sunday.—Forman, W. O., *Elementary School Journal,* June, 1926, p. 771.

THE STEREOPTICON AND ITS USES

GARDNER L. HART
Supervisor of Visual Education, Public Schools, Oakland, California

THE MODERN STEREOPTICON is often called a "daylight lantern" for the pictures which are projected are so brilliant and clear that a dark room is not necessary. This, in itself, is a decided advantage for educational uses. Students may take notes, draw, or do other correlated work while the slides are being shown. The class remains in its natural environment, and the pictures become an integral part of the lesson.

Some practical suggestions—A few simple rules should be followed in setting up and operating the projector to have it work at maximum efficiency. The size of the picture may be varied by changing the distance between the screen and projector. When the distance between the screen and the projector is increased, the size of the picture will be increased, and, conversely, when the projector is moved nearer the screen the pictures will be smaller. The size of the picture must be determined by the size of the room. It should be large enough so that those farthest from the screen can see clearly. However, there is often a tendency to project a picture larger than is necessary.

People who are near the front of the room often have difficulty in seeing a large picture, as the objects are greatly increased in size. Usually a small bright picture will be much more effective than a large picture with less illumination. The intensity or brightness of the picture may be materially increased by placing the projector nearer the screen. If the picture is reduced to only one-half its original size, the image will be four times as bright. This is of great importance when the picture is projected in a room which is not darkened. The secret of good projection in a light room is to keep the size of the picture small.

The stereopticon will fill a greater number of uses than any other type of projector. Lantern slides may be obtained to illustrate practically any unit of instruction from the kindergarten thru high school. These slides are made by specialists—scientists, musicians, historians, artists, travelers—and may be purchased at a very nominal cost. Most of the slides of this type are made by a photographic process. The picture is printed on a piece of glass, one side of which is covered with a photographic emulsion. After the slide is developed, washed, and dried, a suitable mat is placed on the picture giving a description of the scene. This mat also serves as a frame, cutting

out the undesirable and uninteresting parts of the picture. A clear piece of glass is then placed over the mat. This glass, and the glass containing the picture, are bound securely together with paper tape, the side of the glass containing the picture emulsion being on the inside. Slides may be easily cleaned by moistening with a few drops of a solution of half ammonia and water or of half alcohol and water, and drying with a clean cloth.

Teachers and students may make many kinds and types of slides to supplement the regular photographic slides. These may serve as an illustration for a student's report, to explain or clarify a project, or to arouse interest in a particular unit of work. Maps, drawings, and sketches may easily be presented in this way. The simplest type of slide is made by writing or drawing with a ceramic or china marking pencil on a clean piece of glass, cut the size of a lantern slide ($3\frac{1}{4}$ inches by 4 inches). It is important that the glass be cleaned with a cleansing solution of water and alcohol or water and ammonia before using the wax pencil. After using the slide it may be washed with soap and water and the same glass used again and again.

Etched glass slides differ from the plain glass in that one side has a frosted appearance and is slightly rough. This type of slide, due to its rough surface, has one very distinct advantage. Drawings, tracings, maps, or sketches may be made directly on the glass with an ordinary black lead pencil. If a mistake is made it may be erased with any rubber eraser. Etched glass slides are particularly valuable in the lower grades. Colored pencils may also be used on the etched glass projecting a colored image on the screen. However, special slide pencils must be used since most colored pencils contain opaque lead and will project black. These slides may also be cleaned with soap and warm water. Colored inks on clear slide glass produce the most attractive type of picture. When projected, the colors are clear and brilliant. However, they are a little more difficult to use than the pencils and require some practise. Pupils from the fifth grade up are capable of using the ink, and the fine results obtained far exceed the slight difficulty in using the ink.

The typewriter slide (sometimes called cellophane) may be used to advantage for music, phonics, reading, and testing. It is possible to draw on the cellophane using an ordinary pen and black or colored India ink. In this way it is possible to combine typing with descriptive drawings or diagrams.

Cut-out profiles of people, animals, and figures may be placed between two pieces of clear glass and will project as silhouettes. These are especially useful in the primary grades for nature study and games. A teacher may have a set of small animals which he

has cut out of heavy paper. These can be projected on the blackboard, traced, and the image moved on the next space. In this way the teacher may have the blackboards filled with animals and other objects which are difficult for children to draw but which they may easily trace. Thanksgiving, Christmas, and many other events may be symbolically presented in this way.

A stereopticon will serve as a fine source of illumination for shadow pictures. If a sheet is pinned over an open doorway, or on a frame, and the projector placed behind this, beautiful silhouettes will be formed by having people or objects placed near, but behind the sheet. Small stage settings for the silhouettes such as trees, boats, or mountains may be made by cutting these objects out of heavy paper, placing them between slide glass and projecting these on the back of the sheet. This is very much easier and more effective than making large cut-outs and pinning them on the back of the sheet. When a new scene is desired it is merely necessary to change to the next slide. If the person operating the projector slowly covers the lens with his hand or with a piece of cardboard, a pleasing dimming effect may be produced. The slide is then quickly changed and the hand slowly removed, and the next scene shows on the screen.

The still film is a wide piece of film on which are printed a series of pictures organized around a single subject, each picture being preceded by a short description. A special attachment is used in place of the regular lantern slide holder. Each film is a complete story and may be used in a variety of ways whenever it is advantageous to show a series of pictures which follow in sequence. The film is pulled thru the projector showing the title and picture one after the other.

Another attachment converts the lantern slide projector into a projector for showing film slides. Film slides are similar to still films as far as content and organization are concerned. However, instead of being printed on a wide strip of film, they are printed on a piece of standard motion picture film. The advantage of the film slide is its nominal low purchase cost. Microscopic slides may be projected with another attachment. This is an advantageous way of presenting microscopic material so that a large group may see the same specimen at one time.

Pictures may be projected on any flat surface, but the quality, clearness, and illumination may be improved by using a good screen. For many years silver screens were universally used. Now, however, they are rapidly being replaced with other types of screens because the new types of projectors with powerful lamps and large lenses no

longer require a screen with a high reflecting surface. Furthermore, colored slides projected on a silver screen appear dull and unattractive. Crystal bead screens are white screens which are covered with small glass crystals. This type of screen is especially good for a long narrow room as it has a high reflecting surface and gives great brilliance to the picture when viewed from a position in line with the screen. However, the image will appear quite dim and dark when seen from the side, and as most classrooms are wide this is a disadvantage.

A plain white screen with a semi-mat surface is usually found to be the best for all general purposes. It possesses neither the disadvantage of the silver screen nor the disadvantage of the crystal bead screen, and is also cheap and durable.

Slides may be projected on a large sheet of paper or a piece of wrapping paper. This procedure is especially valuable in tracing maps. The size of the image may be increased by moving the projector away from the paper or decreased by moving it toward the picture, and thus the size of the image may be changed to fit the size of the paper. Students are then able to make maps showing such things as products, natural resources, cities and towns, trade routes, topography of the country, and even animals and other figures may be easily enlarged and traced.

Slides may be projected on the blackboard without the use of any screen. This practise is very valuable in the lower grades, especially in the teaching of reading. The teacher may write directly on the picture as shown in Figure 1, thus making a very close correlation between the object and the printed word standing for that object. Number completion, true and false questions, completion questions, and other types of work of a similar nature may be effectively carried on in this manner.

Conclusion—The modern stereopticon is light, simple to operate, sturdy in construction, equipped with a powerful incandescent lamp and fine lens system, and is capable of projecting a clear brilliant picture in any ordinary classroom. It is possible to adequately illustrate every subject in the curriculum by either photographic lantern slides, etched glass slides, slides made with special inks, cellophane slides, silhouettes, still films, film slide, or microscopic slides. In many cases it will be possible to utilize not only one kind of material but many kinds, for each type serves as a new stimulus and assists in presenting additional material. A set of one type of slides may be used for a general survey, another for motivation, a third for clarifying topics or illustrating student reports, a fourth for presenting

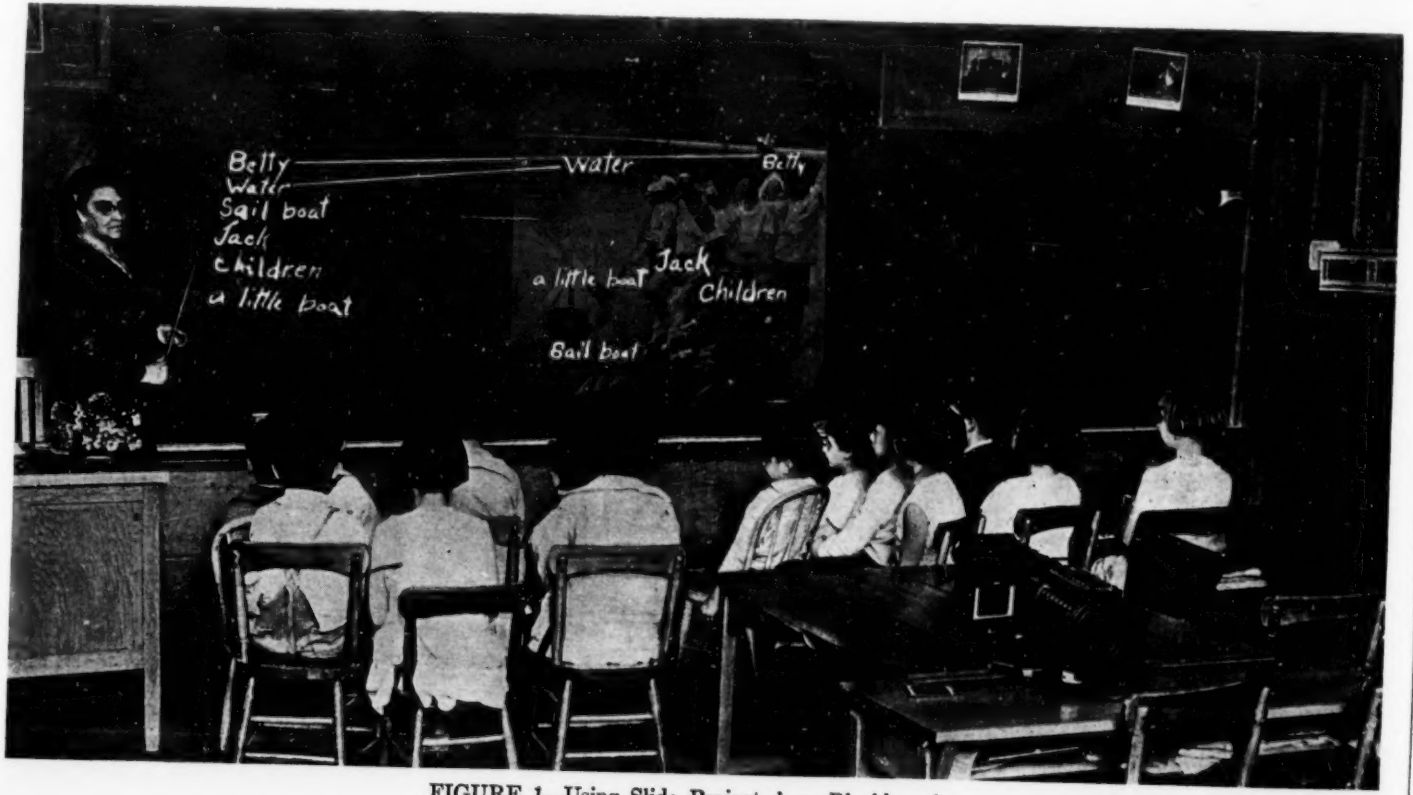

FIGURE 1—Using Slide Projected on Blackboard.

factual material and graphs, and a fifth for a check up or review. Thus we see that these different types of materials do not conflict but instead each gives the teacher a new and different approach to the subject. Children enjoy setting up the stereopticon and assisting the teacher in its operation. There is nothing intricate or complicated about the projector and the only repairs are the occasional replacing of a burned-out lamp. When one considers the many ways in which this projector can be used, it is truly an essential instructional tool that each school should possess.

THE FILM-SLIDE is taking a definite place in the home, business house, or in the classroom, which cannot be fulfilled by the motion picture or any other medium of picture-projection. Consequently, it should be considered as a distinct development to tie in with the lantern-slide projector, motion-picture projector, and the stereoscope. All are filling special fields; but the film-slide projector is opening a broader field among individuals who do not care to go to the excessive cost of more elaborate equipment when satisfactory results can be obtained with the smaller apparatus. The film-slide is meeting a need which is met in no other way.—Morgan, Willard D., *Educational Screen,* November, 1930, p. 269, 283.

EFFECTIVE SLIDES MADE BY TEACHER AND PUPIL

WILLIAM A. BONWELL
Principal, Waco Elementary School, Wichita, Kansas

HOW OFTEN we hear the statement "vitalizing the curriculum." It stimulates us to seek means to make the work of the classroom meaningful and to capitalize the interests of the pupils. Schools may well take a page from the book of business experience to find one solution. The "seeing experience" has long been used by business in the form of billboards and national advertising. Whether it is a collar or an automobile, the urge to buy is accompanied by a vivid mental image of the most prominently advertised makes of these articles.

We have attempted in Wichita, to use various forms of visual aids to bring the pupil in closer relationship with real situations. Maps, charts, graphs, flat pictures, moving pictures, stereographs, and lantern slides, all offer their own specific contributions. The slide, however, offers something unique in itself; a personal, intimate expression of individual experiences.

The teacher-made slide in first-grade reading—While we have used commercial slides as a means of motivating conversation and the development of vocabulary in first-grade reading, it was found that the possibilities were limited. It was impossible to capitalize upon the personal interests and the activities of the children. For this reason it was decided to make our own slides for class use so as to provide for greater flexibility in the development of interests and of reading material.

The opportunity for more extensive and personal use of the slide presented itself on the opening day of school last year when a first-grade girl brought her kitten to the school. Immediately the kitten became the center of interest and from the conversation of the group a simple story was developed and printed on the board by the teacher. The story was then typed on cellophane by means of carbon paper. A silhouette of the kitten was cut from black paper and together with the typed cellophane was bound between two slide cover glasses.

Other slides were made, each containing a sentence from the story and illustrated by a silhouette. Later as pupils learned to read each sentence by the accompanying illustration, a card was placed over the silhouette in such a manner that only the sentence appeared. When a pupil was uncertain of the sentence the card was slipped out and the illustration again appeared with the sentence. Slides were also made containing phrases, words, and groups of related words for various types of drill.

Another type of slide, used to develop activity stories in the beginning first grade, was the ordinary photographic slide made from a camera negative. Many pictures were taken of the group in various activities; at a party, with their pets, playing with toy balloons, and on excursion trips. These pictures were then printed on sensitized slide plates. The use of these photographs helped the children to develop many stories which were later presented in typed form with silhouettes to illustrate the key words.

The primary colors were taught by balloon or circle pictures. Balloons were sketched with colored inks directly on the glass and the name of the color typed on cellophane. Other slides, made with varying numbers of objects sketched on the glass with black ink, were used for counting. It was found that the personal experience with pictures formed associations between the illustrations and the word symbols. The mental images formed resulted in more lasting concepts.

Following the pre-primer work, consisting entirely of activity stories, the stories in the primers were first presented by slides. Colored inks were used to illustrate such stories as " Little Black Sambo," while silhouettes were used to illustrate others such as " The Gingerbread Boy." Inasmuch as the vocabulary in the pre-primer work had been directed toward the stories in the primers, progress was rapid. New stories were all presented by slides but the use of the slides decreased and the reading time in books increased as work progressed thru the year.

In a controlled experiment of the teaching of first-grade reading conducted by the writer, several outcomes favorable to the use of slides were found.[1] Both the control and the experimental groups were taught by the same teacher who used the chart-story method. The essential difference was that materials, matching, and flash-card drill were presented by means of slides in the experimental groups. According to tests the experimental or " slide " group developed a greater general reading ability. These pupils also had read more books at the end of the semester than had the control groups. Ability to grasp new words and phrases was also greater in the experimental group. The recognition of a larger number of words isolated from meaning content as " this," " the," and " were " was higher in the groups using the slides. There was considerable evidence that interest was greater and attention longer sustained in the experimental groups. The mechanical nature of the projection lantern itself seems to have a permanent interest for pupils. The use of slides increased

[1] Bonwell, W. A. *The Efficiency of Visual Education in the Teaching of First Grade Reading.* Unpublished master's thesis, Leland Stanford University, Palo Alto, California. 1933.

the personal satisfaction of the experimental groups in their ability to take up a primer and to enjoy it as a book.

As the work progressed a number of important advantages were noted in favor of slides. The ease and rapidity of presenting a variety of material is time saving, and tends to hold the attention of the group. The flexibility of this type of material allows for the preparation in advance of a large variety of situations using the same vocabulary. This procedure tends to reduce the bored feeling on the part of pupils and prevents losses in attention. One of the most appreciated assets of this type of material is its compactness when not in use and its ready accessibility, as compared with the necessity of reprinting material on charts or the blackboard, and of storing of a quantity of bulky charts and cards.

Slides in geography—In the fifth grade a geography class became interested in the problem approach to the major industries of the immediate territory. Trips were made in groups to the various industries and reports made to the class of their findings. Pictures were taken at the stockyards, flour mills, packing plants, refineries, and the oil fields. Many slides were prepared to illustrate the reports on these various topics. In many instances pupils made sketches on slides, where pictures could not be obtained to show conveyor systems for moving wheat in elevators, the location of industries, and the way oil is carried from the oil fields to the refineries by pipelines. By such pictures, maps, and sketches pupils were able to share first-hand information with others who had not met the same situations. Such slides gave the pupils confidence and interest in making their reports to a group unfamiliar with the subject. This group seemed to have a better understanding of the environmental factors which cause men to engage in the particular activities of their region. They were better prepared to understand why lumbering is a major industry of the Northwest while wheat growing is important in the Middle-west. This contact with pictures of their own make gave pupils a finer appreciation of pictures of other regions. The increase in confidence in their reports, the clarification of ideas, and the finer appreciation gained from slides resulted in a notable improvement in the problem attack by pupils.

Slides in nature study—Success in the use of slides in other ways led to their use in various phases of nature study. One teacher made slides for the study of birds as they appeared in the spring. The various types of bird nests were drawn on ground glass. Slides were also prepared showing the various types of bills found on native birds as the hawks, the humming birds, the fish-eating birds, and

the woodpeckers. Various types of feet as those of the waders, the swimmers, and those that perch were also sketched, as were the tails of such birds as swallows and woodpeckers. Sketches were made also to show the types of houses most desirable for various birds. In other cases tree leaves were sketched to illustrate the different shapes, the resemblance between trees, and other characteristics. Such concrete evidence presented before the group created a lasting interest in nature study on the part of many.

Slides in the teaching of health—An ingenious teacher may find many uses for slides to aid her in the teaching of an abstract or difficult situation. One of the most difficult items to teach in physical education and health is posture. This difficulty was partially overcome in our school, by a series of slides illustrating both good and poor postures. Pupils were used as the subjects of photographs and the negatives used to print slides. Pictures were taken to show standing postures, postures both in seats too large and too small, and seats improperly spaced. Terms such as "hollow back," "low shoulder," "protruding stomach," and "low or high chin" immediately became live subjects for conversation. Pupils took an intense interest in these pictures of themselves and their friends and readily pointed out defects or commented favorably on good position.

Health teachers also found many other uses for slides. Outlines for health lessons, balanced diets, and rules for health and safety could quickly and easily be shown as the teacher moved from room to room on a rotating schedule for this subject. The slides resulted in clear suggestions for the correction of posture defects and discussion of health lessons.

The value of slides in oral English—It has been found that slides are an especially strong vehicle for the development of oral English. While this type of English report may be correlated with geography as discussed above there are many more ways in which slides may be used to advantage. Pictures taken of points of interest by pupils while on vacations, when printed on slides serve as an excellent means of inspiring them to good oral English. Many pupils enjoy making a series of slides to illustrate a story or poem they wish to tell the group. These may be sketched on glass with black ink, colored inks, or colored pencils, and illustrated by silhouettes. Such slides are an excellent means of clarifying ideas for expression as well as serving to create a mental image in the mind of the listener.

Slides and school publicity—Slides may be used to advantage in interpreting the school to the community. Many activities of the

school may be recorded on slides and used in talks before the public to explain these activities. Pictures of the school doctor examining and immunizing pupils against diphtheria, and the school dentist examining the teeth of pupils, have done much to create interest in, and goodwill for these functions of the school. A picture showing the library in use by a class of pupils leaves a pleasant effect on the public. Scenes from the life of George Washington, in pantomime by the children, or scenes from the classroom showing projects under construction, or a mother hen with her newly hatched brood being studied by the children, have gone far toward demonstrating to the public that the schools of today are offering many opportunities for self-direction and individual development.

Other uses—The use of this type of slide seems limited only by the ingenuity of the teacher and the pupils. Outline maps for use in geography may easily be made for class study. Songs may be typewritten on cellophane and thrown on a wall by means of a projection lantern for community or group singing. Objective tests may be presented by slides and the response only written on paper by the pupils. The number combinations and problems for drill may be presented by means of slides, as well as many other forms of drill work. Such slides are advantageous in that once made they are easily preserved, and much time may be saved which is usually spent in writing such drills on the blackboard.

Materials—The materials for making the slides discussed in this article are inexpensive and easily obtained. The slide cover glass, transfer or carbon paper, sensitized plates, binding tape, inks, and pencils may be obtained from many photographic supply houses. Several commercial companies are now offering for sale complete kits for the making of slides. Another type of slide not discussed above may be made by coating cover glass with ordinary cooking gelatine diluted to about one-fourth strength. There is some advantage in using this type of slide where fine lines and accurate drawings are desired. It is best to secure colored inks and colored pencils from companies selling them for slide purposes as many colors break down under the light and are not reproduced accurately. The ordinary cellophane in which many articles are wrapped when bought serves admirably for slide purposes. No attempt has been made to list all the materials available, or all the possible uses of slides, but rather to suggest results as we have found them.

Conclusion—The study and evaluation of our use of teacher- and pupil-made slides has led to a conviction that they serve as an excel-

lent means of bringing the real experiences and interests of the pupils directly into the classroom. The intimate, personal relationships made possible by the use of slides offers a means of bringing life and meaning into our curriculum. We are convinced that continued exploration into the possibilities for the use of slides will definitely widen the scope of their use.

IN THE SPRING we saw the beauties of the national parks and learned something about the duties of a forest ranger and the importance of forest conservation. . . . . In one year the stereopticon has made a place for itself second to nothing else in the life of our school. In awakening interest, in imparting instruction, and in giving pleasure, as well as in developing initiative, it has gone far beyond expectations. Furthermore, we have only made a beginning, for we are constantly finding new uses for our stereopticon and feel that its possibilities are unlimited.—Moore, Bertha S., *Elementary School Journal,* June, 1925, p. 773-74.

PUPIL-MADE LANTERN SLIDES

W. T. R. PRICE
Teacher, Scarborough School, Scarborough-on-Hudson, New York

SINCE THE first magic lantern of Walgensten in 1665 there has been a steady increase in the use of lantern slides for both entertainment and educational purposes.[1] The introduction of the carbon arc lamp, and finally the high-powered incandescent lamp have contributed largely to the efficiency and ease of operation of the lantern, while photography with its recent developments in color processes has made possible the production of beautiful colored slides. Of these photographic lantern slides there is a wealth of material available in museums, private collections, commercial houses, and educational institutions.

Value of pupil-made slides—In spite of the strong position held by the photographic lantern slide in the field of teaching aids it lacks, in common with much of the material presented to the pupil, the ability to induce original thought and self-expression. If the student could go out and take his own photographs and make them into lantern slides, his association with the subject in question would be strikingly more intimate, and the teaching value of the experience proportionately greater. This procedure is possible to a certain degree with older students, but introduces technical difficulties which put it beyond the reach of the elementary school.

There is, however, a lantern slide which can be wholly constructed by the elementary pupil and which combines a number of desirable features. This slide is made by drawing or painting directly on glass or other lantern slide material, and adapts itself to a wide range of subjectmatter and technic.

The preparation of the slide induces: original thought, research and study, self-expression, personal participation, accuracy of detail, and artistic arrangement.

In projecting the slide on the screen, before the class, the pupil is conscious of: pride of accomplishment, sharing the experience with others, dramatization, maximum attention of the audience, and satisfaction in having been personally identified with the project.

With regard to the pupils to whom the slide is presented there is special interest from the fact that one of their number has produced the slide. There is also an opportunity to criticize and correct any omissions or inaccuracies, and above all a desire to share in a similar experience.

[1] According to the *Encyclopedia Britannica* (1929) the magic lantern was first described in *Ars magna lucis et umbrae* in 1646 by Athanasius Kircher.—*Editorial Committee.*

It may be pointed out that few of these advantages would have attended the showing of a ready-made photographic slide.

Pupil- and teacher-made lantern slides have been used to advantage in our school from the first to the eighth grades and in the high school departments of history, Latin, French, English, science, fine arts, and music. Last year students and teachers made over one thousand slides which were added to the permanent collection.

This extensive use of lantern slides was greatly facilitated by the installation of projection equipment in every classroom.

Types of pupil-made slides—It is evident that in most groups of students there will be a wide difference in artistic ability, and that without considerable training we cannot expect uniformly good results in original drawings. This limitation points to four natural classes into which pupil-made slides may be divided: (1) purely original drawings or text; (2) adapted drawings, in which the student changes, or uses some part of an existing drawing; (3) copied drawings or text; and (4) tracings.

All of these classes have their natural functions, and while the original drawing is very desirable, there are many occasions where copies or tracings are justifiably expedient. A poor screen image is unsatisfactory alike to artist and audience; the teaching value is low and the pupil feels that his effort has been in vain. There are also many cases where a tracing is preferable to an original drawing in the matter of time saving, or where a facsimile is desirable.

Materials and their uses—On the basis of several years of experience with pupil-made slides at Scarborough School, it is believed that the following suggestions may be useful:

(a) *Basic materials*—

Materials are limited by their transparency, ability to withstand heat, and the ease with which they may be treated with pencil, ink, paint, or other marking materials. Under these limitations we have: (1) glass: clear and etched; (2) lumarith: (cellulase acitate) clear, frosted, and colored; and (3) cellophane: clear, textured, and colored.

The clear glass and clear lumarith produce the most brilliant screen image and, with a good projector, may be used without darkening the room. Etched glass and frosted lumarith stop considerable light and can be used to advantage only in a darkened room. Cellophane is used mainly for typed slides and for colored backgrounds.

The surface of lumarith is very soft and easily scratched. This material as well as cellophane should always be placed between two cover glasses and bound with tape.

(b) *Marking materials—*

(1) *Black pencil* lettering or drawing can be done only on etched glass or frosted lumarith. On the etched glass use a 4H or 6H pencil for clear fine lines. A softer pencil may be used for sketches. On lumarith use only soft pencils and light pressure—otherwise the frosted surface will become scratched and show white marks.

Pencil on etched glass may be used by pupils of all ages, while lumarith is not suitable below the fifth grade.

(2) *Colored pencil* made specially for lantern slide work may be used only on etched glass and is not very satisfactory except when applied in concentrated form. This technic is not practical for pupils below the sixth grade. Ordinary colored pencils are somewhat opaque and few of them are at all satisfactory.

(3) *Opaque black ink* specially made for application on glass may be used on all of the basic materials. Ordinary waterproof drawing ink may be used on lumarith, but is unsatisfactory on glass.

Before attempting to use ink or liquid color on glass, the surface should be cleaned with aqua ammonia or diluted alcohol to remove any trace of dirt or finger marks.

(4) *Liquid color* specially made for painting on glass may be used on any of the basic materials. Apart from artistic embellishment, color is definitely essential, (a) where it will aid in contrast or differentiation, as in maps and charts; (b) where it will aid in correct representation, as in showing the true colors of birds and flowers; (c) where it will increase interest or appreciation thru better artistic value.

"The human eye loves color. Whether they know it or not, all people react or respond to the influence of color. The degree of this reaction varies greatly—but all are susceptible to its influence. Color has power to attract attention, to stimulate emotion, to cheer and animate, or to quiet and subdue." [1]

Our failure to locate any suitable color on the market led to some intensive local experimentation, which resulted in the production of a brilliant, transparent color which may be applied easily to glass, lumarith, cellophane, paper, or practically any surface. This material was called "scarborite" and is now procurable in nine colors, including white and opaque black. It may be applied to any of the basic materials with brush or pen; is quick drying, and easily removed with a special solvent.

[1] Snow, Bonnie E., and Froehlich, H. B. *The Theory and Practice of Color.* New York: Prang Co., 1918. p. 41.

Many beautiful slides in full color have been executed by high-school students, while quite creditable results have been achieved in fifth and sixth grades.

(5) *Typed slides* are made on cellophane. A good grade of carbon paper is placed on each side of the cellophane, which is then put in a typewriter with ribbon removed as in cutting a stencil. This arrangement makes an impression on both sides of the cellophane and is sufficiently opaque to throw a clear letter on the screen. The cellophane is bound between two clear cover glasses.

(6) *Mounted specimen slides* consist in placing a leaf or other thin object between two cover glasses. The black silhouette thrown on the screen shows the true outline of the object, but no interior details. Similar effects are obtained by pasting opaque cut-outs on the glass. Colored cellophane cut-outs may also be used.

(7) *Superimposed color slides* have been devised for use in teaching color combinations in the art department. Squares of color are painted on two clear cover glasses in such a way that when one glass is slipped over the other the colors merge—blue and yellow overlap to form green, yellow and red to form orange, and so on.

This procedure necessitates making an opening in the end of the slide carrier so that the glass may be moved during projection.

(8) *White line drawings* may be produced by using a stylus on frosted lumarith. This procedure smoothes out the frosted surface and appears as a white line on a gray background, giving somewhat the effect of a blackboard drawing.

General information—The size of the standard lantern slide is $3\frac{1}{4}$ inches by 4 inches. The slide is always placed in the projector in the horizontal position. The effective portion of the slide should be confined to a space $2\frac{3}{4}$ inches by 3 inches. This will leave a $\frac{1}{4}$ inch margin at top and bottom for the binding tape and $\frac{1}{2}$ inch at each end for title and catalog number. Even if the $\frac{1}{2}$ inch space is not used for this purpose it is well to keep within the specified limits to avoid having part of the image cut off by the frame of the condenser lens.

Each slide, even for temporary use, should have a small spot or star of white or bright color in the lower left corner. This aids in correct placing of the slide in the projector. As the operator stands behind the projector, the slide is inserted with the spot in the upper right corner.

Imperfections in lantern slides are magnified many times in the projected image, and a slide which appears quite perfect in itself may leave much to be desired when thrown upon the screen. For

this reason it is desirable to try out all slides on the screen in advance of the formal showing. Some form of "light table" is also useful in previewing the slides as well as in making them. The light table may consist simply of a square of etched glass with a light beneath it, or if etched glass is not available, clear glass over frosted lumarith will serve quite as well and is less expensive.

It is imperative not to touch the exposed surface of the slide before the cover glass is in place as finger prints interfere with the application of ink and color and are also often visible on the screen.

Slides made on etched glass with black or colored pencil, ink, or "scarborite" color may be used without cover glasses for some time if kept in separate partitions in the slide box and handled with reasonable care. All permanent slides, however, should be covered and bound with tape. The most satisfactory tape is cellophane coated with an opaque adhesive which does not require moistening.

Ink should be applied with a fine lettering pen. For liquid color use only good quality camel's hair or sable brushes. A brush that loses hairs is useless for lantern slide work as the hairs cannot be removed after the color is applied.

Conclusions—The elementary pupil-made lantern slide holds a very real position in the field of teaching aids. It teaches the pupil to think because he *must* think in order to make a presentable slide. He is not merely *exposed* to an experience—he is part of it. The result of his thinking and his accomplishment is shared with his classmates and his teacher in a definitely dramatic fashion, and the whole experience is calculated to make an impression on his mind which cannot be easily forgotten.

The organization of state, or even national, clearing-houses of information on teaching aids is worthy of consideration. Principals often want to know where to get maps, charts, models, literature, projection apparatus, motion picture films, lantern slides, and lantern slide materials. Much duplication of research and experimentation could be eliminated and a vast amount of valuable material could be made available to more schools if there was such a central agency.

THE OPAQUE PROJECTOR IN THE SCHOOLROOM

ERMA L. ENGEL
Principal, White School, Detroit, Michigan

IN RANKING the visual equipment in common use in the elementary school a foremost place must be given the opaque projector. It is our purpose to record here its varied possibilities for usefulness.

What is the opaque projector?—The opaque projector is designed to show on a screen, prints, drawings, postcards, specimens, and other non-transparent materials. Many different models of projectors are now on the market. Very few are made for only one type of still projection since several kinds can be successfully combined in one machine thereby giving a wide range of usefulness with small additional cost. We find some projecting only opaque material; some slides and still films; others opaque material and lantern slides; while others serve a three-fold purpose, projecting opaque material, lantern slides, and film slides. Specimens may be shown by use of special attachments.

Some practical difficulties—The size of the room and kind of work to be done will help to determine whether opaque is the type of projection that can best be employed. There are models for different space requirements including the usual classroom, the small auditorium, and the large assembly hall. Some long distance opaque machines will project a good picture on an opaque screen at a distance of forty to fifty feet. However, it is more often used for shorter distances. There is a certain unavoidable loss of light in projecting opaque material that the glass slide and film do not lose. For this reason, in order to get a clear picture the size of the picture on the screen must be small, since brilliancy and clearness of outline decrease as the size of picture increases.

Various types of screens are successful for opaque projecting. Sometimes the blackboard or plain wall are used but a special screen is far more useful. Plain white screens are serviceable but the added brilliancy which specially prepared screens afford in projecting opaque material must not be overlooked. Since the clearness of the picture depends to a degree upon the quality of the screen, the best that is available should be used.

Many teachers have desired to use more visual projection in their classrooms but the preparation for its presentation in a darkened room involves difficulties which decrease its wide adoption. An especially prepared translucent screen has been made which gives a

very good picture in partial light and in a semi-darkened room projection can be successfully carried on. The lantern is placed in the front of the room several feet behind the screen, which is between the lantern and the audience and the picture is projected thru the screen from the rear. To further overcome the natural light of the room, the apparatus itself should be in partial darkness; that is, there should be no bright light directly behind or from the side. If a teacher is fortunate enough to have a machine for her exclusive use it may, since it requires only a small space, be given a permanent position where it is ready for frequent use.

General classroom procedure—With the daylight apparatus ready for use, the teacher can make visual projection an important aid in teaching. The class may be conducted as usual but whenever a picture, chart, or map is needed to clarify the discussion, the teacher can in a few moments time project it on the screen. Used in this way visual projection becomes a part of the daily lesson, not an end in itself. Its use comes at the time when the learning situation renders it very effective, as the children are working under normal conditions, reading and taking notes. There are none of the upsetting factors so often attendant on special visual projection in a completely darkened room.

The opaque projector with its daylight screen and wealth of available material admirably meets the classroom teacher's daily needs. It shares with other visual instruction in helping to make for effective teaching. It stands ready to introduce a new subject for study in an interesting way; it economizes time, since, thru the eye, most children learn with greatest rapidity; it gives more accurate knowledge to children than word descriptions, due to their lack of experience and misunderstanding of words; it clarifies more quickly than long word explanations; and it is especially effective in summing up and reviewing a subject.

Most of the materials used for opaque projection could be passed around the room but projection greatly enhances their educational value. Because of the small size of most pictures they would have to be used exclusively by the children individually but with the aid of projection they can be used for group work also. For example, a child may prepare a report using several small pictures as part of his study. How much more interesting and successful is his report when the class can view the pictures as he speaks! A long word description would not be nearly so effective. As the small pictures meet the child's individual need so the same picture projected meets the

group's need. That which served its purpose of the study period can be turned to use in the recitation or discussion.

Everyday sources of materials—Books provide an excellent source of pictures. The teacher who has access to a school or public library can there procure many good pictures on almost any subject. Great progress has been made in perfecting book illustrations so that today they are excellent both in content and composition. The best available should always be used. The entire book may be inserted into the machine so that no damage need occur to either the picture or the book. Thus the illustrations in any book can be made to serve a group as successfully as one child, and good pictures can supplement the regular text illustrations. The writer has in mind *Boys' King Arthur* illustrated by Wyeth, and *Marigold Garden* illustrated by Kate Greenaway.

Magazines also are a rich source for procuring good pictures. It is impractical for any teacher to try to keep many magazines for constant use but he can keep the pictures that will be of help to him in teaching. Among the magazines that contain excellent pictures are the *National Geographic,* the *Grade Teacher, Nature Magazine,* and *Junior Red Cross.* Almost any magazine printed on good paper will at times have suitable and useful pictures which should be cut and filed under usable classifications for ready reference and use.

In recent years advertising has so improved that many very good pictures can be obtained from advertising literature. If secured from high-grade firms such pictures are usually of a good quality of workmanship and the composition authentic.

Frequently teachers have collections of travel photographs taken on vacation trips that make excellent material for group study when used in the opaque projector. Many, if they had the equipment for such projection, would be stimulated to take and keep such photos.

Sets of postcards are excellent for projection purposes. Thru careful selection very good ones can be secured and their uniform size facilitates their use. Such a set covering A Century of Progress at Chicago added immensely to the interest and learning of a group that was working in our school on a social science unit.

Children delight in seeing their own original drawings on the screen. Even the less talented ones can produce suitable pictures to illustrate their stories, compositions, and reports. Crayon colored pictures show up very nicely so that the smaller children who work with crayons more easily than paints can successfully prepare such illustrations. Working on paper is far easier for the younger children than working on glass slides, and if opaque projection is made avail-

able a far greater volume and variety of children's drawings may be used.

Printed and written material is generally not needed as often for projection as the picture but it can be used if desired. The amount that can be projected at a given time is not great and therefore the procedure is not generally considered to be practical.

Filing supplies for efficient use—Every teacher using opaque projection should have her own picture library or access to one kept by the school. Larger schools with libraries have picture files which serve well the need for opaque projector work.[1] Also public libraries and museums in larger cities have high grade collections. However, lack of such files need be no great handicap since the teacher can gradually build up her own workable collection. The children, if interested in their work, will contribute a great deal to this collection.

When great numbers of pictures are to be handled and used they must be so organized that those on any subject can be easily and quickly found. The pictures should be classified, labeled, and filed. To facilitate handling, smaller pictures, especially sets, may be uniformly mounted to fit the projector machine. All but the very small children can be taught to use these files successfully. Quite satisfactory cabinets for filing can be improvised from boxes. Heavy carton filing cases may be purchased at small cost.

In making and using such collections of pictures, maps, and charts, the following cautions should be considered. Only pictures of good quality should be used. Colored pictures should be artistic and the composition authentic; if black and white, outlines should be clear and distinct. Also, the pictures should give accurate and true information. Any that are misleading because of poor perspective or form should be discarded. The picture without a great deal of minute detail is best for elementary children since the little child becomes confused with too many points to be observed at one time. In other words the pictures should be graded for the children.

One advantage of the picture collection over the slide is that it can at small cost contain the very latest on any given subject. The cost of constantly replacing obsolete glass slides or films is prohibitive to the average school but the picture collection gathered from so many available sources can and should be kept up to date.

Some specific classroom procedures—Many stories and poems taught in literature work can be made more vital, comprehensive, and interesting with pictures presented to the group thru the opaque

[1] See Chapter III of this yearbook for suggestions on how to mount and to file flat pictures.

projector. Such pictures can show the background necessary for their appreciation and understanding. For example, the story of "Hans Brinker" will be more thoroly enjoyed if a number of good pictures of Dutch living conditions give the setting first. The poem, "Little Maid of Far Japan," will take on added meaning when the children are made familiar with Japanese life thru pictures illustrative of it. Often good illustrations of the poems and stories themselves are available and can be used.

The opaque projector may be found a benefit in library work. When introducing a new publication an illustration in the book or the paper jacket may be projected to add interest and variety to the procedure. Library games may be played, such as, guessing the name of the story from the projected illustration and straightening out jumbled titles. In the case of reference books where only one copy is available their use may be quickly and efficiently taught by projecting the title page and other parts.

It is every child's right to know and to appreciate the best in the realm of great art—masterpieces of painting, sculpture, and architecture. The school can help to give this understanding and appreciation. However, it is not often that the teacher may work with the original. He must depend largely upon pictures, and success will be determined by his ability to secure those of excellent quality. To obtain an adequate collection in the form of slides or large prints would be expensive.

He may solve problems very satisfactorily by securing small pictures of good quality. Several publishing houses furnish them at very reasonable prices. By projecting these he has at his command pictures of adequate size and quality to do good work. Such art work is especially effective when correlated with other activities and if the teacher has such a collection at hand to use when they fit in best with other work. Thus they are of greater value than large prints secured from museums or libraries which must necessarily be ordered in advance and can be kept for only a limited time.

The projection of opaque material is not limited to the above subjects but enough situations have been mentioned to suggest uses for it in many and varied classroom situations. Wherever visual projection would be helpful and good opaque material is at hand it can be used to advantage.

The real and most important work for the opaque projector is in the classroom but it has also been found effective with somewhat larger groups in the auditorium. Here correlated units of work are summarized by use of the opaque projector.

Conclusion—After having become familiar with all kinds of visual aids the teacher will find that opaque projecting plays a large part in her visual education work. It has certain disadvantages—it lacks the action of the motion picture and the sense of depth given by the stereograph. But every visual aid has its disadvantages as well as its advantages and each should be used where it is most effective. The advantages of opaque projecting are worthy of serious consideration. Its convenience of presentation under ordinary classroom conditions makes it a valuable tool, and the wealth of good material easily obtainable for it assures accurate, up-to-date, pertinent means of instruction. It can be made to stimulate and to help children solve their problems, thereby advancing measurably their development.

ENTHUSIASM FOR VISUAL AIDS in teaching has been widespread both here and abroad. Proponents of the idea have hailed it as the panacea for all the ills of our teaching methods and have made the most extravagant claims regarding its effect on children's purposing, learning, and methods of work.

The educational world as a whole, however, has been somewhat apathetic toward a complete acceptance of many of the claims of the visual education enthusiasts. This may be partly due to the inertia of the great body of teachers toward making innovations. . . . .—Reeder, Edwin H., *Teachers College Record*, May, 1928, p. 704.

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CHAPTER VII

SILENT AND SOUND MOTION PICTURES

EDITORIAL COMMENT

A SHORT TIME AGO a motion picture producer announced that he expected to revolutionize the schools by the development of educational films. According to newspaper accounts, he expected to issue films of such effectiveness that most (if not all!) classroom teachers would be forced into unemployment. Some excitement developed among educators, not because they feared for their jobs, but because they were concerned that this producer might succeed in deluging children with some of the emotionalized piffle which had characterized his former commercial productions. Shortly after the first flare of publicity, newspapers carried an account of bankruptcy proceedings and the Napoleonic gesture collapsed.

Fortunately education is not dependent upon Hollywood for its classroom motion pictures. Quite independently a number of research workers, cinematographers, and manufacturers have been working steadily to produce films and projectors suitable for school use. That these unpublicized agents are producing results is shown by the materials presented in this chapter.

The first contributor takes the position that the motion picture is a basic teaching tool; it is the acme of man's effort to make an exact record of things seen. The second article sets forth in some detail several criteria which should be applied in the acquisition of films. Another article describes the steps necessary to use films effectively in classroom activities. The next contribution summarizes the advantages to be obtained from the proper use of sound films. Finally, one article deals with the possible uses of motion pictures in connection with school assemblies.

Few people doubt the potential value of the motion picture as a device whereby instruction may be greatly enriched. The first obstacle to widespread school use, however, is the development of projectors and films which may be acquired and maintained at a reasonable cost. The second problem is for principals and teachers to become so skilled that motion pictures can be utilized as an integral part of the classroom learning situation.

Those who are interested in other aspects of the general topic are referred to the selected references at the end of the chapter.—*Editorial Committee.*

THE MOTION PICTURE AS A BASIC TEACHING TOOL

B. A. AUGHINBAUGH
Supervisor of Visual Education, State Department of Education, Columbus, Ohio

ONE CANNOT USE a device effectively unless he definitely understands what that device is. There may be some question relative to designating the motion picture a device, but no matter what we term it, it distinctly functions as a medium of communication and, unless this fact is recognized, many errors are sure to result.

Those who would employ the motion picture for any purpose, whether for entertainment, advertising, or education, should first read Terry Ramsaye's *A Million and One Nights* [1] in order to properly understand its background. This book suggests that, while apparently the motion picture is something very new, it has been evolving longer than the alphabetic forms of recorded communication, and is the answer to man's original ideals and ideas on the subject.

Motion pictures the answer to a human need—Man wished to record events exactly as they occurred, that they might be recreated at some distant time or place. His artistic limitations in those far off times prevented the immediate realization of this wish, and consequently he found it easier to develop symbols for the sounds he uttered, than pictures of the things he saw. Alphabetic communication was the result, but not an altogether satisfactory one as is disclosed by the fact that man never ceased in his search for a means of recording, and recreating events exactly as he saw them. The discoveries of persistence of vision and photography solved this problem of the ages, and in due time the motion picture came forth. Thru it man was relieved of the necessity for translating things into nouns and action into verbs. The things *acted!* But there was an additional relief.

By the symbolic method man was compelled to summarize his experiences, leaving it to the recipient of the message to translate the summary in the light of his, the recipient's own experiences. There were two serious limitations to this procedure. In the first place it required considerable skill to make these summaries, and in the second place there was no assurance that the recipient was possessed of the necessary experiences to properly interpret the message.

It is said that Shakespeare attained the greatest skill in summarizing experiences, and that poetry is the highest form of such summarizing. It is needless to point out that only a relative few possess

[1] Ramsaye, Terry. *A Million and One Nights.* New York: Simon Shuster, 1926. 1000 p. 2 vol.

the bard's experience and can properly interpret his works. This fact exposes the second limitation previously noted. Huey in his *Pedagogy of Reading* [2] points out that reading (which is the translation of the summaries mentioned) is a highly artificial process for which the human mind was never intended, and Ramsaye in his *A Million and One Nights* discloses why this is so. Ramsaye describes verbal communication as a detour, and so long has man followed this detour that we speak of one who has obtained any degree of information thru this method of communication as "a man of letters," or "a well-read man." We seldom recognize these phrases as metonymies.

There has always existed a secret rebellion in man's mind against the artificiality of reading and words, and it crept out in such phrases as "seeing is believing," "mere hearsay evidence," "one picture is worth a thousand tellings," and "show me." So long and eagerly had man sought to communicate by motion pictures that their success was assured from the moment the first feeble attempt flickered before his eyes, and today, much as publishers dislike to admit the truth, the motion picture has made serious inroads on their business.

Symbolic, recorded communication will maintain its advantage, and prestige *so long as it is the more efficient medium,* and no longer. It tremendously holds that efficiency in its grip at present due to its great convenience over cinematographic communication, and whether the latter will ever supplant the former, or even supercede it, depends upon inventions as yet probably unthought of. However, we are blessed with both forms, and it would not be wise to discard either, or to use one where the other would be better suited to the work we have in hand. No good workman uses a shovel where a spade would be a better tool, and yet no competent workman constantly using these tools fails to provide himself with both. We like this analogy because the same manufacturer probably makes both spades and shovels, and we have constantly maintained that the same concerns should produce both textbooks and educational motion pictures. This disturbing question would then quickly disappear, for it is not one of values but one of trade competition, which should have no place in the real work of educating the youth.

All of the various "visual aids" are merely steps in the evolution of the motion picture. They are all usable, but the motion picture alone can dispense with the aid of words and yet tell its story. In all other cases, unless it be the model, the motion necessary to give continuity to thought must be supplied by words. The fact that sound has been added to the motion picture has very little to do with the whole story. The motion picture was evolved to escape the

[2] Huey, E. B. *The Psychology and Pedagogy of Reading.* New York: Macmillan Co., 1908.

limitation of words, and not to perpetuate them. Before sound pictures came, we were well on our way to developing the cinema to its fullest powers. The progress will be slower now. By this we do not mean to detract from this invention. It has its uses. It makes the transition easier to those of us (and that will be all of us for a long, long time to come) who have been schooled in the absolute use of words as a medium of expressing thought. We did not take very kindly to "The Last Laugh," a motion picture, which was produced entirely without words. The step was too great for us. Sound allows more realism under certain conditions as in the picturing of Niagara Falls.

Sound motion pictures require sensible use—Where the subject is technical, it is quite a distraction to watch an experiment, and at the same time listen to an intricate discussion of what is appearing on the screen. Langmuir in his talking picture "Oil Films on Water" gives a fine example of how this can best be accomplished without dividing the students' attention between two forms of communication (visual and auditory) relating to the same thing at the same time. In the case of dramas this situation does not arise since the actor is not addressing us directly in an impersonal capacity.

When someone tells us about what is taking place on the screen, we are put in the same position as when two persons address us on the same subject in a different way at the same time. In the talking news reel, we note that the speaker carefully confines himself to such remarks as definitely relate to the action. He does not tell us that Vesuvius is in eruption, while the picture on the screen depicts a horse race. Faults almost as bad have been noted in some attempts at talking educational pictures. The producer in such cases failed to realize what we have attempted to make clear in this discussion; namely, that the motion picture is a very powerful medium of communication *per se,* and refuses to take second place to auditory communication, when the two are placed side by side. If the words therefore attempt to convey a different message than the pictures, they are completely lost in the resulting melee. The pen may be mightier than the sword, but the eye is mightier than the ear. Supplementary explanations are therefore best given in subtitles, and the employment of sound confined either to those made by objects in the picture, or to words very closely and directly relating to them.

Some guides suggested by research—From many years of experience and experiment we have discovered that where motion pictures are used, whether the text is read before or after the showing of the pictures, the text becomes supplementary to the picture, rather than

the picture supplementary to the text. For this reason we have found it better to show the picture first and do the reading afterwards. The same situation comes to light in travel. One must frequently apply some persuasion to read about where he is *going* but he reads with delight about where he *has been*. There may be those who reverse this attitude, but a check up reveals that they are in the minority. However, there is little objection to showing a picture twice—once before and once after reading the text.

An extensive experiment [3] conducted by the state department of education in Ohio revealed that the picture always took precedent over the word as authority. It was found in tests aimed to discover the comparative amount of information pupils acquired thru pictures or words, that on the initial test the picture group won the highest rating. On the second, or recall test, given a few weeks later, the picture group showed no change in rating, but the reading group advanced several points. A check up showed that the pupils in the reading groups had, in the interim between tests, talked to the picture groups relative to the test questions used, and on the second test they changed their answers to conform with the information supplied by the picture groups. This change of mind revealed that they regarded the information of the picture group superior to their own and raised the rating of the reading group.

This same study disclosed that ordinary testing was not a satisfactory measure between picture and reading groups, and that the 30 percent difference so often mentioned in such "visual instruction" studies was only the difference between groups, *where the content used had been of an expository nature*. Where the content was descriptive, the difference was as high as 100 percent in favor of the picture group. In narration there was no difference, and in argumentation the difference was indeterminate, but in favor of the picture group. As to the time used in preparation, it was found that less than one-third the time was consumed in preparing a group by pictures as by words. Tests relating to the affect upon the acuity of the eyesight thru reading pages and viewing motion pictures, showed that reading lowered the acuity by 50 percent in the same time that viewing only lowered it 15 percent, hence reading was far more deleterious to sight than viewing motion pictures.

The Ohio study further revealed that ordinary tests, such as are used commonly in school to determine achievement, fail to weigh everything *not of an expository nature,* and therefore the teacher only receives about one-fourth of the data as to the pupil's actual achieve-

[3] Aughinbaugh, B. A. "Visual Instruction Study." *Better Schools Bulletin* 9: 4; May, 1929. Ohio State Department of Education.

ment. In other words pupils acquire much information in school (as well as out of it) for which they are given no credit. This concomitant learning may account for the fact that many school-failures turn out to be life-successes, and vice versa. There is a distinct need for a revision in achievement testing as practised in schools today, and when this revision comes, the true value of the use of visual aids in instruction will be revealed.

Conclusions—Most of the so-called educational motion pictures which have been produced have failed to accept the proper status of the motion picture as a medium of communication. This failure has led to the production of pictures which fail to have the continuity of the material found in textbooks. The content, together with its general arrangement in textbooks, had been developed thru commercial competition and usage, until it is very close to perfection. There is no good reason for changing either content, arrangement, or continuity when screen versions are produced. The closer the screen versions follow the textbook setup, the more usable the pictures will be.

From the foregoing discussion it may be seen that the best way to use motion pictures in connection with classroom work is to use them as textbooks would be used, and bear constantly in mind that the motion picture is merely a new form of recorded communication. Its sole purpose is to convey information exactly as the sole purpose of the printed page is to convey information. It can have no other function! The first advantage of the motion picture lies in the fact that less time is consumed in conveying its message because it can perform two or more rhetorical functions at one and the same time. Its second advantage lies in the fact that it eliminates the artificial mechanics of reading wherein the reader must constantly summon up a fringe of imagery to interpret what he reads. This frees the mind for thinking, and hence a more definite and lasting impression is made. A third advantage is found in the authority man attributes to information acquired first hand over information acquired vicariously thru the sensory experiences of others. A fourth advantage comes thru the fact that those experiences necessary to develop the involved meanings are directly supplied rather than provided from a possible store of experiences in the mind of the reader. A fifth advantage is the ability to produce visual experiences which the human eye cannot ordinarily see. This is done thru slow and rapid motion photography.

The motion picture, therefore, becomes a qualitative gain to communication instead of a mere quantitative gain as is the case with

the radio or phonograph. If television becomes successful it will add nothing to the story, since it will be merely another quantitative gain. It is a distributor such as are already found in the printing press, the phonograph, and the radio. But the motion picture by showing us how crystals form and flowers grow, accomplishes something new in communication, and is, therefore, a qualitative gain. It is the highest development in the evolution of communication, and all further developments will be merely quantitative refinements. There can be no further qualitative gains.

The motion picture is one of the two great tools at the command of the teacher—the printed page (or spoken word) is one, and the motion picture is the other. Television will only be to the motion picture what the printing press or radio has been to the word. As teachers are already familiar with how to use that tool of communication called the spoken or the printed word, they are just as familiar with how to use this newer tool, *the photographed active scene* or motion picture. The sooner they realize this, the better it will be, and they should use these tools of communication exactly as they make use of the ears and eyes. The printed page represents the ear and the motion picture the eye. God gave us eyes to see and ears to hear and by His grace we should use them as effectively as possible without too much question as to their relative merits.

TRUE TEACHING ARTISTRY resides in the most skilful adaptation of materials or methods to the specific persons to be taught. In an audible film the stimulation is all in one direction, from the mechanical teacher to a group of pupils.—Dale, Edgar, Ohio State University *Educational Research Bulletin*, May, 1931, p. 291.

STANDARDS FOR THE SELECTION OF CLASSROOM MOTION PICTURES

EDGAR DALE

Research Associate, Bureau of Educational Research, Ohio State University, Columbus, Ohio

THE ELEMENTARY-SCHOOL PRINCIPAL is often called upon to assist in the selection and purchase of educational aids. He frequently finds himself, therefore, in need of practical devices and standards by means of which he can, with the aid of his teachers, discover which aids are likely to be most satisfactory and economical to use. These devices and standards must be simple but sound. This article is an attempt to fill that gap.

Do the films harmonize with the objective of the school?—The first and the most important standard is that films ought to be so selected that they are in harmony with the objectives of the particular subject or activity which they are intended to promote. Therefore, no satisfactory purchase of films can be made until objectives have been carefully scrutinized. Let us be specific. I have before me the course of study for seventh-grade geography at Buffalo, New York. The objective of one particular lesson is to show the interdependence of production, transportation, and manufacture. The concrete example that has been used by the teacher to show interdependence is that relating to the changing of wheat to bread. A number of visual concepts enter into this story; namely, plains, grain elevators, lake port, milling center, unloading a freighter, bins, hold of a freight vessel, locks, Sault Canal, water front, and so on. This leads us to our next question: What visual aids, if any, are necessary in the presentation of these topics?

In treating any particular topic which has visual elements such as the geographical unit just described, it is evident that no pictorial material at all may be needed. If the essential meaning of the lesson can be secured without the introduction of visual aids, then no such aids should be introduced. The teller at the bank does not need to have our picture affixed to our checks in order to know that they are made out by us. Our signature, a verbal symbol, is sufficient to convey the essential meaning to him. If the important visual concepts in a lesson are already well known, we may dispense with visual aids.

However, if we learn thru experimentation that certain concepts are not accurate or meaningful in the minds of the pupils we next face the question of the type of visual imagery to be supplied. Shall we use still pictures, motion pictures, or excursions?

The distinctive quality of the motion picture is the portrayal of objects or events, the essential meaning of which is best understood when they are seen in motion. The motion picture is dynamic; it shows processes, development, and change. The still picture is static; it shows products or results. The motion picture actually portrays action, the still picture can only suggest action.

An illustration should make these points clear. A junior-high school geography book which I have at hand contains an excellent drawing entitled, "Vertical Section of a Blast Furnace." The coke, iron ore, and limestone are represented by little dots and are appropriately labeled. A statement below the drawing says, "The melted slag is lighter than the melted iron and floats upon it and runs off separately." I have asked several adults to study this drawing and then explain how a blast furnace works. They are unable to do so even after considerable study. However, when we turn to a classroom motion picture which presents the action of the blast furnace by means of animated drawings, we find that the action is shown so clearly that elementary-school pupils have no difficulty in understanding it.

A criterion related to the one just mentioned is the following: The action material presented should be relatively unfamiliar to the child and of such a nature that it cannot be taught more effectively and economically by first-hand contact with the object or event. Altho this criterion is apparently a recounting of the obvious, nevertheless, it is frequently violated; for example, the pupils in the seventh-grade class may need visual supplementation of the abstract concepts dealing with the process of bread manufacture. Does this mean that a film must be purchased? Not necessarily. It is possible that a modern bakery which welcomes visitors is within walking distance of the school.

We see, therefore, that as this group of teachers canvasses the geography course of study they must at the same time canvass the local surroundings to discover whether supplementary aids are available within the community. If they are readily available it is manifest that no films will be needed in this particular area.

A caution should be borne in mind at this point. Under certain circumstances the viewing of a motion picture of an event may be more illuminating than first-hand observation. Several advantages may be recounted. First, it is more economical of time. Second, the scenario writer has made a careful study of the industry and includes only those crucial details necessary to understand the industry; he has made a careful selection in order to present a type form. Only under the most expert guidance could this same type of selection be

secured when a group visits an industry. As a consequence the children may be surfeited with a vast amount of detail and fail to note or remember the most important facts. Third, distractions are at a maximum when visiting certain industries. The children view the motion picture, however, under almost ideal conditions of attention. Fourth, the teacher can comment during the showing of the film to point out a significant fact. The noise of the machinery and the preoccupation of the children with new experiences often make such instruction on an excursion exceedingly difficult. Fifth, the motion picture can show by animated drawings certain actions that cannot be seen even by first-hand observation.

Is the material in the films accurate?—If the teachers, themselves, are specialists in the field of a particular subject they will be able to judge the truth of the material as presented. This safeguard is especially important in geography. Cameramen are sometimes inclined to substitute picturesqueness for accuracy. Further, conditions within a country change rapidly and shots taken a few years ago may not accurately represent conditions today. Dependence must be placed here, in a great degree, upon the reliability of the manufacturers of such films and the sponsorship of the particular film itself.

Are the films satisfactory from a technical point of view?—A film should present unmistakable evidence of excellent photography. This quality is necessary not only from the standpoint of its relation to increased teaching effectiveness, but also from the standpoint of eliminating eye strain on the part of the audience. The photography should be analyzed from the following points of view:

(1) *Sharp definition is essential*—This means that sharp focus lenses should be used almost exclusively in making educational motion pictures.

(2) *Most scenes should be taken in closeup*—The purpose of educational motion pictures is to show children what things look like and how they work. Doubt in the mind of the spectator as to what is occurring on the screen is evidence that the cameraman failed to get close enough to the action. The long shot should be used primarily to orient the spectator, the closeup to show the details of the action.

(3) *The acting of characters who are introduced into the picture must be effective*—If it is an industrial picture, the workers should appear to be unaware of the camera and not look up at it. Other acting in the picture should be judged by the same standards that one judges a play or a theatrical motion picture by; namely, was it effectively done? Educational motion pictures have been particularly vulnerable at this point.

(4) *The photography should be steady*—Lack of steadiness of the picture is due to motion caused by hand cranking or because the camera has not been securely placed upon a tripod, thus producing jerkiness.

(5) *All scenes in the picture should reflect good composition*—This standard means that there will be a balanced grouping of the objects in the picture, that

no scene will contain objects unrelated to the action being depicted, and that the whole arrangement will tend to focus attention on the central idea.

(6) *The animated drawings used in the classroom films should show careful planning and skilful rendering*—An animation is a drawing, or rather a series of drawings, made by an artist which when photographed one after the other shows such activities as the work of an internal combustion motor, the circulation of the blood, how knitting is done on a knitting loom, and the like. Animations should be judged from the standpoint of their photography, the naturalness of the action of the machine or activity, and the clarity of the labeled notes affixed. They make clear what cannot be registered in any other fashion and should only be used when this is the case.

Will the films be satisfactorily understood by the pupils?—The material in a film should fit the abilities of the pupils for whom it is intended. It is evident, of course, that a particular motion picture has a wider range of use, as far as grade placement, than is true of a textbook. One must, however, carefully scrutinize the titles or the vocabulary used in motion pictures to see that they are not beyond the abilities of the children who are using them. This caution applies also to the length of the film. In general we would expect that films used in the kindergarten and first grades would be shorter than those used in the upper grades. However, almost no experimentation has been done in this field and we must rely upon the observation of the teachers in respect to fatigue and interest.

The general organization of the film should be such that it tells the essential story in a simple, unified, coherent manner. Various types of sequence may be used. The most common, of course, is the chronological sequence. A typical workday is shown on the farm from the time the farmer gets up in the morning until he goes to bed at night. Again we may build up our sequence by going gradually from the familiar to the unfamiliar. A third type of sequence is that of development. We trace the latex from the rubber tree thru its fabrication into rubber sheets, follow it from Sumatra to Akron, Ohio, and see it made into tires. A fourth type of sequence is causal. A chain of events occurs as a result of some action. Vibrations of the air are set up by some agency and an animated diagram illustrates the result step-by-step until at the end some person becomes conscious of a sound.

No matter what type of sequence is used, the film should give evidence of a unified flow of events or activities. Transitions should be smoothly developed. Nothing should be included which obscures the central idea of the film.

Will the cost and the total number of showings utilized make films desirable investments?—For example, let us assume that the typical film costs $24 and that it is used within the school system four hun-

dred times in its life time. Will this investment of 6 cents per class be a wise one? Will the pupils get enough extra from viewing the film to make this a worthwhile expenditure?

It should be pointed out that since the frequency of use of the film lowers the per class cost, careful attempt should be made to select those films which have a wide range of use. In many cases such films would be utilized, for example, not only in history in the seventh grade, but also in economics in the high school and the social studies work in the early grades, or perhaps in the kindergarten.

Will the teachers use the films?—A particular film may have been carefully selected by a small committee. It may fit all the standards that have been set up in this article. However, unless that particular film can evoke an enthusiastic response from the teachers who are to use it the applications of these standards mean little. This possible difficulty suggests, then, that in large measure the teachers who are to use such films be given the opportunity to evaluate the films before they are purchased. If films are purchased only after rigid scrutiny of the administrative officer of the school and by the teachers who are to use the film, we are certain that there will be a much greater tendency for them to be used.

Summary—The prospective film purchasers should evaluate teaching films with the following questions in mind:

(1) Do the films harmonize with the objectives of the school?
(2) Is the material in the films accurate?
(3) Are the films satisfactory from a technical point of view?
(4) Will the films be satisfactorily understood by the pupils?
(5) Will their cost and the total number of showings utilized make them desirable investments?
(6) Will the teachers use the films?

SOUND PICTURES for educational purposes have been shunned due to costliness and lack of films with the proper educational material. The shortage of educational materials is probably due to the absence of demand, which in turn may be traced to the lack of equipment. The solution is to reduce the cost of equipment.—Brockway, Don C. and Brockway, W. W., see p. 423 of this yearbook.

AN EFFECTIVE LEARNING TECHNIC USING MOTION PICTURES

JOHN A. HOLLINGER
Director, Department of Science and Visualization, Public Schools, Pittsburgh, Pennsylvania

CLASSROOM PICTURES differ materially from the ones used in the auditorium. In some respects they are similar. Each motion picture must have a center of interest, a theme of value as a unit area of learning, and the composition must be skilfully developed.

The *classroom* motion picture has specific structure as a learning device. It should contain details of information which are helpful in understanding and fixing ideas or in developing skills. Motion pictures are desirable when understanding requires motion. Many motion pictures contain too many " stills " and too many titles.

The *auditorium* motion picture must have a *general* appeal. Large ideas of social, esthetic, scientific, historical, geographic, or similar values are essential. Usually rather large groups of varied interests must be captivated in the general assembly. Mass instruction on a large scale can be successfully accomplished in the auditorium if the right type of picture is used.

Classroom procedures—For effective use in classrooms, motion pictures must be an integral part of the teaching procedure. Merely projecting motion pictures has *little* educative value or none at all. Motion pictures are effective devices in the hands of skilful teachers. There is evidence to show that motion pictures are no more effective in learning than other devices when they are not skilfully used.

When a motion picture occupies a major position in a learning plan several distinct steps in the procedure are evident:

First, leading ideas contained in the learning area are introduced to provide proper mental set or desire to learn. This procedure might be called " motivation " and may be accomplished in various ways. A few leading questions may be asked. A brief and pointed discussion may thus be stimulated.

A short introductory talk may be given by the teacher. One or more members of the group may have had some direct experience which can be capitalized. In a 5B group beginning a study of Western United States, there was a bright girl who had spent some time in Estes Park. She contributed much to develop a proper mental set of the entire group. The learning area for the day was " Yellowstone Park," a motion picture.

Such a short introductory presentation may be intensified by means of photographic prints (snapshots), stereographs, lantern slides, charts, maps, cartoons, or similar aids.

Second, a preliminary test is given to stimulate a desire to know, or to develop skill, and to direct attention to important ideas in the motion picture. This test

should be objective and easily scored. The scores should be recorded before the motion picture is presented. After a little practise this requires only a few minutes.

Third, the motion picture is presented immediately after the preliminary test has been scored, and the scores have been recorded. A full reel, four hundred feet of 16 mm. motion picture, or one thousand feet of 35 mm., requires from twelve to fifteen minutes or more for presentation. Pupils should be encouraged to ask questions at any time during the presentation. The operator of the projector should stop long enough to clarify points concerning which questions are asked. The picture does not necessarily need to be kept on the screen while such a discussion takes place. The more recently developed 16 mm. projectors have attachments which enable the operator to reverse the pictures so that they may be repeated for the purpose of clarifying ideas.

Fourth, the presentation of the motion picture is followed immediately by an objective test. The test should be the same one given before the picture was presented. The test is scored and the scores are again recorded.

Fifth, the pupils' individual scores made on the preliminary test are compared with those of the follow-up test. Such a comparison of scores helps to determine what further learning is necessary and a good assignment naturally results. There may not be time in the scheduled period for this fifth step, hence the assignment for the next period might be made independently of the analysis of the results of seeing the motion picture.

Sixth, further assignments should cover definite reading, group discussion, questioning, and repeating parts of the picture as may seem necessary for fixing ideas. Reorganization of ideas in review by pupils' reports, teachers' comments, pupils' statements of their conclusions, and similar procedures should follow.

Seventh, a final test is given. This test may cover several motion pictures and other devices used during the work on a unit of content material.

In the Pittsburgh schools the technic presented above has been found to be effective. A study was carefully set up and supervised with equated control and experimental groups. Nine motion pictures were used in nine specific learning areas which were covered in thirty-three periods of forty minutes each.[1] The experimental group, using motion pictures, showed a decided superiority over the control group which did not follow the prescribed technic. In the experimental group the increase of information was practically 23 percent greater than the amount of information accruing in the absence of visual aids with the control group. This difference is statistically reliable and obtains when gains are measured by an information test following immediately the instruction period. A similar test, administered five weeks later, shows an additional gain of 11 percent for the visual aids group but a loss of 11 percent for the other group. When comparisons of gains are made as between the initial test and the test of delayed recall, the visual aids group exceeds the other by a statistically reliable difference of about 54 percent. This evidence is conclusive that the technic described above has value.[2]

[1] The nine Eastman Teaching Films covered the nine subjects: cattle, corn, iron ore to pig iron, meat packing, range sheep, transportation on the Great Lakes, wheat, wheat to bread, and Wisconsin dairies.

[2] For further details see the report in *Pittsburgh Schools*, Vol. 8, No. 2, November-December, 1933. Department of Research, Public Schools, Pittsburgh, Pa.

Auditorium procedures—The technic for using motion pictures in the auditorium is equally exacting but more varied. Motion pictures used in school should be instructive rather than merely entertaining. Entertainment is the business of the motion picture theater. The school should not compete with this business. With the aid of motion pictures in the auditorium mass instruction may decidedly effect economy of time, energy, and money costs.

For effective use of motion pictures in the auditorium proper mental set is essential. This attitude can usually be developed by a short introduction before the picture is presented. Some sort of follow-up, frequently in observed conduct controls, is very important.

Pictures for use in the auditorium must be carefully selected. A score card for guidance in the selection of such pictures may be helpful. Several such cards are now in use.[3]

Suitable auditorium pictures are secured with difficulty at the present time. Good *silent* pictures are no longer available. Formerly such pictures as "Four Seasons," "The Cosmic Drama," "Ramona," "Evangeline," and "Chronicles of America" photoplays, furnished excellent material. However, few new silent pictures of this type have been produced in recent years. Sound motion pictures suitable for auditorium programs have not yet been produced in sufficient quantity to justify the installation of sound projection equipment.

When pupils understand that the purpose of viewing auditorium motion pictures is the learning of something specific they usually apply themselves and the results are quite satisfactory. When sound projection becomes a part of the school equipment, motion pictures might be studied either in a separate course of instruction or as a part of the course in literature. Motion pictures could be presented to large groups in the auditorium after which discussions, in smaller groups, could be effectively carried on in classrooms.

In one instance the purpose of the auditorium picture was character training. Courtesy was the specific aim—courtesy on the street, at home, in the school, in social life, as one meets people everywhere. Several groups set up situations in which courtesy was dramatized. No motion picture could be found that covered all the points to be emphasized. Several groups prepared scenarios and made their own pictures. The teacher was the photographer with his own camera. The board of education furnished the negatives and paid for developing and printing. Pupils seeing themselves on the screen in "courtesy acts" were intensely interested in their project. Attention was directed towards character training on a rather large scale. The

[3] For example, the Pittsburgh score sheet.

results in conduct controls in school, at home, on the street, and elsewhere were quite noticeable.

Conclusions—A motion picture may occupy the larger portion of specific content material, conveying most of the information to be presented in a particular learning area, and stimulating reflective thinking within this area. On other occasions a motion picture may occupy a minor position in the lesson plan, merely illustrating concretely such points as need to be classified or made crucial.

When a motion picture occupies a *minor* position in the development of a learning unit it may be presented either in parts or as a whole, but less formally than when it occupies a major position. Only that part of the picture should be used at a given time which illustrates the particular point or points under consideration. This part of the film may be twenty feet, fifty feet, or one hundred feet, more or less. For a preview or review the entire picture may be presented at the proper time in a developmental plan. When used in this way the teacher should be careful to avoid listless, passive attitudes on the part of pupils. There should always be intellectually active responses. Pupils should be held responsible for ideas presented by the motion picture and for reflective thinking stimulated by it.

Practising effective technics in the use of motion pictures presupposes skilful administration of visual aids. Materials must always be conveniently available when teachers need them. Teachers must use materials carefully and must assist in maintaining them in good condition.

THE POSSIBILITIES of the motion picture in international understanding are limited only by the ingenuity of man. It speaks to the learned and unlearned. It is a popular entertainer of both the old and the young in all parts of the Orient and the Occident.—Zook, George F., *Motion Pictures in Education in the United States,* 1934, p. iii.

USING THE SOUND FILM IN THE ELEMENTARY SCHOOL

V. C. ARNSPIGER

Director of Research, Erpi Picture Consultants Incorporated, New York, New York

IN THE FIRST FEW GRADES, the elementary-school teacher of today is faced with a dilemma. The success of her teaching depends on how rapidly and correctly her pupils acquire a broad, rich background of experiences—how quickly their environment expands. Yet this expansion is often delayed much too long awaiting the acquisition of reading skills by the pupils, for the source of most background material comes from the pupil's interpretation of the printed page, supplementing the spoken word of the teacher. Therefore, despite inanimate pictures, museum objects estranged from their natural setting, and possibly a few field trips, the teacher is compelled to mark time in providing for her pupils a vital, rich background of experience, until after two or three years, the pupils have mastered the skill of reading.

There is need for a medium which provides experiences enlarging the environment of the pupils from the outset of their school career. These experiences should be provided as rapidly as the pupils can assimilate them; they should be presented in a clear and vivid fashion; they should be independent of the printed word. The educational sound picture promises to meet this need.

Advantages of the sound film—The main advantage of the educational sound picture over other instructional aids is that it guarantees, within a comparatively short period of time, a vivid and accurate portrayal of important persons, places, objects, and events in their natural setting. It can accomplish this because it is not limited by boundaries of time or space and because it can utilize the combined effects of two important senses—sight and hearing.

Another important consideration of the sound picture is its timeliness. At any time in the year and as often as necessary every pupil can have brought vividly to the classroom the spider spinning its web or the plant developing from seed to flower; he can hear the massive tones of the bass viol, the blaring notes of the trumpet, the rhythmic beat of the tympani.

The utilization of the educational sound picture does not preclude the necessity for learning the fundamental skills. As a matter of fact it provides the child with a rapid increase of experiences at an early age and consequently with innumerable incentives for learning to read and for further extending his world. Yet experiencing con-

tinues at a steady pace and is not interrupted or delayed because of the necessity for acquiring skill in reading.

Finally, the results of the experimentation in this field generally point to the fact that the educational sound picture can make definite contributions to the learning of elementary-school pupils, superior to those possible with all other visual aids.[1]

Some difficulties in adapting films to school use—It must not be supposed that any sound picture at all would satisfy the needs of the educational field. An educational sound picture, in order to achieve maximum effectiveness as an aid to classroom teaching, must be the result of careful research and the collaboration of educational experts, subjectmatter specialists, and production technicians.

The problems of picture production for use in the educational field are complex. An analysis of the subjectmatter fields must be made to discover which fields can best be enriched by this medium. The areas lending themselves to sound picture treatment can then be organized into instructional units.

The units of instruction must also be carefully analyzed and studied to determine which elements should be presented in sound picture form or by other means. Specific standards for sound picture production [2] should constantly be kept to the fore during the construction of the picture continuity and in the actual production of the picture. The choice of specific production technics, such as time-lapse photography, slow-motion, animation, microphotography, telescopic photography, special sound recording, and amplifying and transmitting devices should be governed by the requirements of the specific concepts to be presented.

The educational sound picture can probably make its greatest contribution when integrated in a broad unit of work. Of special value are handbooks or manuals for teachers, containing objectives to be achieved, suggested approaches to the study of the unit, detailed subjectmatter, an adequate bibliography, and suggested activities to be carried on by the pupils in the study of the unit. Study guides for the pupils are desirable. Objective tests, devised to measure the facts and knowledge acquired as well as the attitudes and appreciations developed, are also important.

Proper utilization of educational sound pictures—The sound picture may be utilized in the ordinary classroom, in a room specially

[1] The experimental and research studies, which should be known to elementary-school principals, have been summarized briefly in the tenth chapter of this yearbook. See particularly the studies by Arnspiger, Rulon, and Stoddard.

[2] Standards for producing and evaluating educational sound pictures have been devised: *A Handbook on Standards for Educational Talking Pictures and Supplementary Materials.* Erpi Picture Consultants Inc., 250 W. 57th St., New York, N. Y.

designed for projecting sound pictures, or in the school auditorium. When the sound pictures are to be used as an integral part of the teaching in the regular classroom, the apparatus should be so conveniently located that its use will not seem difficult to the teacher; the teacher must be able to turn to the sound picture apparatus almost as readily as she turns to a map or a globe. Several 16 mm. portable machines have been designed especially for such classroom use. Such a machine may be equipped with a platform on wheels so as to accommodate all the classrooms on one floor.

If a special room or sound picture studio [3] is provided it may be desirable to have a regular operator. Where this is not practicable a special assistant from the central office may be secured for projection duty. This provision will relieve the teacher from the necessity of dividing his attention between the mechanical and the instructional phases of the projection.

In planning a sound picture studio certain requirements should be met. The room should have proper acoustical properties, easy control of daylight and ventilation, and convenience in putting the equipment into operation. Storage space should be available. A power-supply outlet in the rear of the room is essential and an additional one in the front is desirable. A fire-proof booth or projection room is an additional necessity if 35 mm. non-portable equipment is used.

The portable 16 mm. apparatus may satisfactorily be used in the school auditorium where the projection distance does not exceed 48 feet. A presentation can thus be made to three or four hundred pupils at one time. Permanent 35 mm. apparatus is desirable for larger auditoriums.

It is also essential that school administrators realize in what respects instructional aids, such as the sound picture, can enrich the curriculum by broadening the scope of specific units of study. A list of the sound films available and a detailed description of each should be procured before planning the utilization of educational aids. The advantages and limitations of each sound film should be noted; the mechanical features of the equipment should be understood; and a well-planned program of sound pictures should be established.

The selection and organization of available films necessitates careful study of the value of each. In large school systems [4] the director

[3] For a comprehensive discussion on school building requirements, see: Devereux, F. L. *The Educational Talking Picture.* Chicago: University of Chicago Press, 1933. Chapter XI.

[4] Charts illustrating local organizations of educational talking picture programs are given in: Devereux, F. L. *The Educational Talking Picture.* Chicago: The University of Chicago Press, 1933. Chapter VIII.

of audi-visual instruction and his assistant should have this particular responsibility for directing the evaluation, selection, and utilization of sound films.

Each school system should put in written form a statement of its educational sound picture needs. The suitability of each sound picture for school use, its correlation with the local courses of study, and its application to specific grade levels should all be carefully considered. As sound pictures are produced they should immediately be evaluated according to established standards.

In order to assure the best use of sound films as teaching aids, it is necessary to integrate them with the local courses of study. Film titles and special features of the utilization of specific films should be included in the written courses at the points where they are of value. A film schedule may be arranged by the director of visual instruction to insure the widest utilization of available films. A systematic plan of caring for the equipment and the materials, especially if they are moved from school to school or from classroom to classroom, is essential. A complete system of records should be kept to prevent delays and loss of materials.

Importance of the teacher's rôle—The educational sound picture properly utilized becomes a tool with which the teacher can present those concepts which otherwise would be extremely difficult or impossible. Unless the classroom teacher appreciates the potentialities inherent in the sound film and understands the most effective utilization of it, its possible contributions to his class are obviously limited.

The classroom teacher has several definite responsibilities in the utilization of sound pictures. He should be able (except in those systems where special operators are provided) to operate the equipment; he must be thoroly familiar with the subjectmatter, the photographic treatment, and the inherent possibilities of each picture to be presented to the pupils; he must know how to organize a unit of activity using the sound pictures. No teacher, in other words, should undertake the use of sound films in the classroom until he knows what they are intended to do, what films are available, and how they can be used most effectively. In certain school systems it may be desirable to organize special classes for the purpose of instructing the classroom teachers.

The organization of a unit of instruction requires careful planning on the part of the teacher. A unit rich in learning possibilities is possible only if the teacher is aware of the possibilities, plans the materials and the methods of instruction carefully, and knows beforehand what outcomes are to be attained. The unit should be flexible

enough, however, to allow for special interests on the part of individuals or groups of pupils.

Utilization of pupil interest—The approach to the study of units may vary considerably from unit to unit. In the primary grades, for instance, a unit on animals of the farm may arise from a discussion of summer experiences, from a study of life on the farm, as a result of stories read in the basal or supplementary readers, or from picture books of farm animals or toy animals.

When pupil interest in the study of a unit has been aroused a careful introduction is necessary. Pupils may relate their own experiences, the teacher may present a general overview of the subject, or the sound picture may be presented in order to orient the study of the unit as a whole. It is probably desirable that this first presentation of the sound picture be prefaced by a brief introduction by the teacher. This introduction will include an explanation of unfamiliar production technics, such as slow-motion or time-lapse photography; it will call attention to the main theme of the picture. Unless the teacher is thoroly familiar with the material of the sound picture, obviously he will be unable to orient his pupils before this presentation.

After the first presentation of the sound picture there should be opportunity for class discussion and pupil questions. These questions may determine the direction in which the teacher organizes the subjectmatter of the unit. The sound picture should be a handy reference at any time during the discussion or during the study of the unit.

The classroom teacher should know what supplementary materials accompany each picture. Some educational films are accompanied by comprehensive teachers' guides, organized as units of instruction. Objectives to be attained are stated, a number of approaches to the unit of study are suggested, the subjectmatter of each unit is given in detail, activities which can be carried on by individuals or groups of pupils are described, and references for the teacher and for the pupils are given.

After the interest of the pupils has been aroused and a good start secured, the important ideas should be developed. It must be remembered at this point that effective learning arises only as the pupils are alert and active. This participation does not necessarily mean physical activity, but the pupils must feel that they are actively contributing to the study of the unit. The sound picture can provide information or clear up misconceptions at this stage in the unit.

Each pupil should view the successive presentations of the sound picture with a specific problem in mind. One group, for example, may wish to find out how a flower is pollenized; another group, how a weak plant holds itself to a support. The number of sound picture presentations during the study of a single unit may vary from two to four, depending upon the subject of the unit, the availability of instructional aids other than the sound picture, the familiarity of the pupils with the subject, the grade placement of the unit, and the intelligence level of the pupils.

As a summary to the unit the pupils should be encouraged to make practical application of the facts and ideas they have acquired as a result of their study. At this point the sound picture may be used as a review or as a medium which aids in crystallizing the concepts gained from the study of the unit. In concluding the unit it may be desirable to administer an objective test in order to make clear both to the teacher and to individual pupils how well the outcomes of the unit have been achieved.

Conclusion—Such utilization of sound pictures that have been properly prepared educationally and technically, can be of vital assistance in the elementary grades in removing those barriers to learning which, altho their magnitude has long been admitted, still loom too large in the path of the developing child.

THE EXTREMELY RAPID and recent development of equipment making sound motion pictures extensively available has left many problems to be solved regarding the place and value of such pictures as an aid in education.—Clark, Clarence C., *Education*, February, 1933, p. 337.

MOTION PICTURES IN THE ASSEMBLY

ORVILLE B. HAYWARD
Principal, Irving School, Hammond, Indiana

THE PROGRAM of the modern elementary school has been much enlarged in scope during recent years. Various social trends and more stringent state laws requiring children to stay in school have increased the size and the complexity of elementary schools. Popular demand has succeeded in adding to the basic subjects of an earlier day instruction in art, music, physical education, manual arts, and other fields of general interest. More recently still it has been necessary for the schools to teach safety, fire prevention, and thrift. Scientific studies in education have led the way to new methods of instruction, to the development of educational and vocational guidance, to the establishment of an extensive system of student clubs and extracurriculum activities, and to the organization of the school into semester or quarterly grade units still further divided into ability groupings. The net result has been a very complicated program.

The need for the assembly in a modern school program—In the first place the assembly serves as a valuable integrating influence, bringing together students of various ages, interests, and abilities to undertake, to participate in, and to enjoy matters of common interest. It helps to develop esprit de corps in the student body. The school assembly is a powerful stimulus to initiative in pupils; it helps to develop qualities of leadership, and to build ideals of service. It affords an opportunity for a general type of instruction in such matters as safety, thrift, health, and patriotism. It also affords the students an opportunity to explore many fields of interest with which they might not otherwise make satisfactory contact.[1]

The aims of the elementary-school assembly may be variously stated, but for the purpose of this discussion the following is a comprehensive list of such aims:

(1) To develop high ideals of citizenship and love of country
(2) To offset the disintegrating influences inherent in modern school organization
(3) To foster school loyalty
(4) To afford necessary contacts with the world outside
(5) To broaden and enrich the cultural background of the students
(6) To explore various fields of learning and life
(7) To promote interest in and to dignify the work of student organizations
(8) To provide wholesome entertainment
(9) To provide instruction of a general nature.

[1] Hamilton, Jessie M. "The School Assembly as a Stimulus to the Academic Subjects." *Fourth Yearbook*, Department of Elementary School Principals. Washington, D. C.: the Department, 1925. p. 238-44.

It is the purpose of the writer to show how motion pictures can be used to advantage in realizing some of the aims of the assembly in the elementary school. Certain very definite ways of using motion pictures in assembly programs will be discussed together with suggestions regarding the proper management of mechanical details.

Motion pictures as aids to learning—Owing to lack of suitable pictures and the expense of providing the necessary equipment the use of films in the schools has spread slowly. The commercial and industrial world has used them in an adequate and effective way. It has now been demonstrated that motion pictures can and do have a real place in the work of the schools,[2] and their use is becoming more frequent. They are particularly effective in imparting instruction of a general nature such as was indicated above. They serve to stimulate interest in the regular school work and to make for economy in learning where a good picture clarifies a process which might otherwise be but dimly comprehended after much reading. They assist learning because of their concrete quality.[3]

The motion picture offers an effective and economical means whereby the student may explore various fields of life's activities as well as fields of learning. Such exploration is desirable both from the standpoint of vocational and educational guidance and that of general education. A single picture may give a better idea of the subject than extensive reading and at the same time effectively stimulate interest in such reading as may be done. The film, " The Story of Gasoline," [4] gives in a half hour a clear conception of the oil industry from the drilling of the well to the service of the filling station. Similarly, " The Making of Steel " depicts the steel industry. In another field we have the picture, " Government of the United States," which shows with the help of animated photography the structure and functioning of our national government.

There are many matters of general information which can be brought before the students by the aid of motion pictures which are either missed entirely in the regular work of the classroom or are dealt with in but a piecemeal fashion. A very good illustration of this type of picture is named " Man's Greatest Heritage." It depicts the story of the development of writing from the earliest times beginning with various forms of picture writing and creates an appreciation of the value of this particular phase of civilized life. A picture of somewhat similar type is called " Time " and shows how time was

[2] Freeman, Frank N. *Visual Education.* Chicago: University of Chicago Press, 1924. 391 p.
[3] Dorris, Anna V. *Visual Instruction in the Public Schools.* Boston: Ginn and Co., 1928. 481 p.
[4] All pictures mentioned are from the collection of the Bureau of Visual Instruction, Indiana University, Bloomington, Indiana.

reckoned from the earliest days to the present. By means of animation the methods of modern scientific time recording are visualized. Another picture, " Transportation," gives a well-rounded story of the development of locomotion from the earliest simple devices to the speed and power of the modern electric locomotive. Such pictures are not only interesting to the students but highly instructive as well.

Motion pictures as aids to culture—Many students experience difficulty in school because of the lack of an adequate cultural background as a basis on which to interpret the unfolding experiences of their school life. There are many who have little or no experience with reading or travel. Here the motion picture is of service. In such a picture as " The Land of Evangeline " the students see pictured the historic spots of Longfellow's poem and are thus able to understand and appreciate more thoroly the great epic of the Acadians.

Not only in literature is such enrichment possible but also in other fields, as for example geography. Irrigation is a matter of basic importance in the geography of a vast section of our western country. A greatly enriched conception of how irrigation works and of what its value is to land that would otherwise be unproductive results from the showing of the picture " Irrigation." This picture shows how modern methods have been used to supplement our natural resources.

Motion pictures as aids in stimulating patriotism—The showing of a picture is an effective and pleasant change from the usual type of patriotic program. There are excellent pictures of this type. The film, " Hats Off," is a thrilling story of the flag and what it stands for. It is entertaining and valuable for all ages in instilling high ideals of national loyalty. Another picture of this type is "American Independence " which depicts the beginning of our national life. In teaching citizenship the picture, "A Citizen and His Government," is of real value. It stresses the duties and benefits of citizenship and shows how education, parks, and playgrounds are maintained and how the government protects the lives of our citizens.

Motion pictures as aids to health and safety—In the fields of safety and health, films help in creating right attitudes toward the common rules so well known but often ignored by many children. The picture, " Bobby's Bad Molar," presents in interesting story form the results of neglecting the teeth as compared with the results of giving them good care. It tends to create a helpful attitude toward the simple requirements of dental hygiene. Another picture that is entertaining as well as instructive is " New Ways for Old," portraying vividly the modern way of treating diphtheria as compared with

the old way. In the field of fire prevention we have the picture, "The Danger that Never Sleeps," which teaches, in a way suited to young children, that while fire may be our greatest friend when under control, it is one of our worst enemies when out of control.

Motion pictures as entertainment—Films for pure entertainment may have but slight instructional value and yet be very worthwhile. The writer has in mind two excellent pictures of this type, both from the general field of travel geography. The first is called "Trails that Lure." It is an enticing pictorial story of a trip by auto up the Columbia River highway, showing the famous gorge of the Columbia River, its waterfalls, and other beauties along the way. The other is a story of an expedition after muskies in the interesting lake region of Ontario. It is called "Invading Muskieland." Elementary-school pupils enjoy these pictures immensely.

Some precautions—Most non-theatrical pictures are now made with safety films. Where it is necessary to make a choice, safety film should be used since this type of film will not burn rapidly but merely blister and shrivel. In making up the program it is well to bear in mind that one ordinary reel of film run thru the machine at an average rate of speed will take about fifteen minutes. Two reels are about the limit of what can be used to advantage in a single assembly program. An opening and perhaps a closing song will add life to the program.

Such details as darkening the room and setting the screen and machine can be attended to by the janitor. The darkening of the room must be adequately cared for if the best results are to be obtained. In this connection it may be well to caution against throwing too large a picture, since the larger the picture the more the light from the machine is diffused, with the result that the picture is dim.

The films should be inspected upon arrival to see that they are correctly wound so that they may be threaded in the machine right side up and right side toward the lens. The machine should be threaded and focused before the assembly. It is necessary to have a good operator, one who can be relied upon to deal with any difficulties which may arise. Usually the operator will be a teacher, tho occasionally an upper-grade boy is found who can be relied upon for this service. There should be someone at hand trained and ready to operate the lights.

Summary and conclusion—Only a few pictures are mentioned above to illustrate the various uses of motion pictures in the assembly. Many others of all types are to be found listed in the catalogs of

universities, museums, and libraries. In a number of states public agencies provide for the distribution of non-theatrical pictures.[5] Worthwhile pictures can be obtained from many industrial organizations and corporations. Such films must be examined carefully by the principal to avoid obnoxious advertising. There are, of course, various commercial agencies for the distribution of non-theatrical films, information concerning which is easily obtainable. Greater expense is involved usually in the use of films from private agencies than from the state agencies.

The writer believes that certain specific aims of the school assembly as indicated above can be advantageously served by the use of motion pictures. Proper care in the planning of programs and in the selection of films, together with adequate attention to the mechanical details involved, will make the motion picture a valuable asset in the assembly.

[5] See the article by Edith A. Lathrop in Chapter XI of this yearbook.

THE EDUCATION OF TOMORROW should give a new appreciation of leisure and its usefulness and a new sense of citizenship and cooperation. The vast potentialities of the use of motion pictures in the nation's education are only beginning to be generally recognized.—Koon, Cline M., *Motion Pictures in Education in the United States,* 1934, p. 44.

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CHAPTER VIII

DUPLICATING MACHINES AND TYPEWRITERS

EDITORIAL COMMENT

MANY ADULTS of today remember the awe with which they watched their first-grade teacher make purple outlines of Santa Claus and Easter eggs from a gelatine pad. Of course, the thrill was heightened when teacher allowed one to make the impressions while she stood by to make sure that the smooth surface of the gelatine was not marred by childish fingers.

Business equipment—including the gelatine pad, the mimeograph, and the typewriter—has assumed an important rôle in the elementary school. The possibility of duplicating outline maps, poems, pictures, stories, and other instructional materials is almost without limit. Pupil-directed activities, such as school newspapers, annuals, posters, and class bulletins, offer opportunities to vitalize and to enrich the class instruction. While the reproduction of materials by means of rubber type or regular printer's type is not presented in this chapter, principals will not overlook the possibilities of this field. Nor will they forget that copyrighted materials are reproduced only with the publisher's written permission.

The chapter presents first an article which tells how an alert teacher may use tests and other duplicated materials to supply his pupils with fresh and vital experiences. A second article lists a number of aids which can be produced upon duplicating machines. The third article touches a field which has been subject to new and recent experimentation; namely, the use of typewriters in the elementary school.

Since the use of typewriters in teaching pupils to write and later to prepare compositions is developing great interest, it may be well to be somewhat skeptical. It is certainly true that research in the field suggests some rather interesting possibilities for typewriters even in the first grade. At the same time attention should be given to teachers of typing in high schools who are saying that the young child is not sufficiently developed to use the typewriter with skill. Hence, he develops bad habits which may never be eradicated when he takes up stenography as a vocation. Certainly this aspect of the problem needs further study before typewriters are too widely adopted.—*Editorial Committee.*

TEACHING MATERIALS PRODUCED WITHIN THE SCHOOL

CHARLES A. SPACHT
and
MRS. LEONORE LEWIS
Principal and Secretary, Henry Barnard School, New Rochelle, New York

ALTHO NO ONE would claim that duplicating devices and materials are, in themselves, new or unusual in any way, yet in our school we feel that the materials produced on the duplicating machines are a genuine aid to modern progressive teaching. All of our teachers use these devices. They use them in different ways, according to their grade levels and subjects taught, and they use them in varying degrees. But the teachers all agree that the materials are a concrete help in the work and they feel definitely that they play a large part in the general life of the school, in keeping the classes in touch with one another, and the parents in close contact with the school.

The materials produced in our school will be discussed under three parts: first, the mechanical set up; second, the use of the duplicating devices; and third, the value of the devices to the teaching and general life of the school.

Mechanical set up—The teachers do as little of the mechanical work of producing the materials as possible. The office administration is designed to relieve the teachers of all unnecessary clerical and routine work. Our theory is that schools exist for the children and children gain most when they have their teachers attention and energies directed toward them. Most of the duplicating work therefore, is done in the office by the school secretary.

Our school has about four hundred children, fourteen teachers, a principal, and a principal's secretary. The equipment consists of a hand-operated mimeograph machine, and a portable duplicator. The latter is used when thirty copies or less are desired. There is also the Giant Primer typewriter which produces letters large enough to be read by first-grade children. To facilitate matters, the Giant Primer is kept threaded with the hecktograph typewriter ribbon. When the regular typewriter is needed, hecktograph carbon paper covered by thin tissue is used for the master copy. These arrangements avoid all necessity for changing typewriter ribbons and enable us to produce quantities of work with the minimum expenditure of time and energy.

Use of duplicating devices—We use the duplicating devices (1) in producing aids for teaching children, (2) in facilitating the general

activities of the school, and (3) in helping the teachers with their professional problems.

(1) *In producing aids for teaching children*—More materials are used in the teaching of reading and language than in any other subject. Practically every classroom from the first to the sixth at some time has called for duplicated materials and all types of work have been produced from the first simple stories, "Ken has a ball," in the beginning of the first grade to the bi-monthly *Class News* published in the sixth grade. There have been picture puzzles to check careless reading in the third and the fourth grades, weekly newspapers which were class stories of projects in the second grade, and original poems and creative work reproduced for class members of all grades.

In the pre-primer preparatory period in the first grade, before books are in the hands of the children, these materials form the foundation of the child's reading. Copies are made of the children's own stories told in class conversation periods, "Molly has a doll" and "I saw a robin." Pictures are drawn with the story typewritten below. Often booklets are made with a story on each page with pictures cut from magazines and pasted in, or perhaps the children draw the illustrations themselves. These child-made stories help to establish background information and expectation. They are interesting because they are personal and meaningful. They are based on the children's own experiences.[1]

Later when reading books are used these materials produced within the school are needed for other purposes. Comprehension questions are guided by the teacher so as to direct the re-reading to that part of the story where she detected the greatest weakness of the children. Confusion as to words, such as "doll" and "ball" may be eliminated with pictures of a doll and ball with the words below and separate words to be matched. This procedure is used before the day is over and the error is established in the mind of the child.

Comprehension questions are more readily adjusted to the varied abilities of the children in the same class. One group is given the problem, "Put a line under the word," while the more advanced groups are filling in blanks from words written below, and the still brighter children are answering questions of their own accord. Placing these varied materials in the hands of the children at the same time prevents the duller pupils from being discouraged by work of which they are incapable and at the same time gives the brighter children a chance to work at their own rate of speed. The children

[1] Paragraph suggested by Helen Holmes, teacher in the first grade.

do not feel conscious of a difference as they are incapable of judging that the tasks are graded and some directions "harder."

In the second grade last year, toward the close of the year, one class was studying community life. They took a trip to the fire house. Upon their return they told about some of the things that interested them and wrote individual stories. Mimeographed sheets were made of every child's story in large type on half sheets of paper. The children fastened them into booklets and pictures of fire engines and fire houses were drawn on the covers and colored with crayon. Art, social science, language, and reading were combined in one interesting project. These booklets were taken by some of the children and read to the first-grade pupils. A few were later given to the first grade for library books.

The bi-monthly newspaper, published by the sixth grade, is one long sheet of paper divided into two columns, newspaper style. The staff of children picks the articles to be printed, counts words, and arranges them for publishing. The secretary of the school does the stencil work. Copies are made for each child in the class and some are sent to the fourth and fifth grades.

Another use to which these duplicating devices are put is in the production of home-made tests. There are sheets of number facts, arithmetic process drills, tests for flower and bird recognition, and sewing tests. These tests have several distinct advantages. They are informal. In the primary grades they are fun. "How many cows did Sally see?" or "Count the number of children at your table" is more like a game than a test. They apply to the work just covered. They are given in time to discover weaknesses and start the remedial work before any erroneous impression becomes fixed.

(2) *In facilitating the general activities of the school*—The miscellaneous uses of duplicating devices, reports of assemblies, councils, school organizations, and groups of all kinds are often those of vital interest to the children. Harold Rugg says, "In the mass school these activities such as exist, are generally called 'extracurriculum'. In the new school they constitute the very heart of the curriculum itself."

Duplicating devices play their part in all the varied activities of our school. Many program folders and announcements are made for meetings of the P. T. A., the music club, and recitals of the piano groups. Of these, last year, the most interesting were the programs of community singing of Christmas carols. The invitations were made in the school on the portable duplicator. They were in the form of folders with the announcement of the program inside and

the covers in four colors—a Christmas picture of carol singers. The cover was the work of the children. To reproduce enough folders for the school eight or ten master copies had to be drawn and painted with the special hecktograph ink. This work was done by the sixth-grade pupils and helped to correlate art with the rest of the work of the school.

The student council which meets every two weeks has the minutes of its meetings reproduced for all the rooms. Then the children in the rooms discuss the rules and regulations decided upon and offer suggestions for the future to their class representative.

Before excursions are made, definite instructions are handed to each child. Groups are appointed with a chairman and all are furnished with the names of committee members, what the committee is to note in particular, and what questions are to be answered by the trip. This simple expedient vitalizes the entire trip and prevents aimless wandering by giving a definite purpose to each member of the class.

During Book Week last year one of the members of the parent-teacher association, a woman who writes book reviews for a local magazine, spoke to the mothers on the subject of books. She brought many books to the meeting and made suggestions as to the proper books to select according to the age and interests of the child. She gave a list of these and other suitable books to the school secretary in advance. Mimeographed copies were prepared for every member of the association and for the teachers. These lists were used by the teachers to supplement their library lists and by the mothers for buying Christmas presents for the children. They formed a bond of interest between the parents and the school.

(3) *In helping teachers with their professional problems*—It is almost axiomatic that anything which tends to keep a teacher abreast of the times and to make him more alert personally, also makes his teaching more alive, more real, and more successful. However, there are too many fine educational books being written, and too many interesting meetings being held, for any one teacher to hope to cover half of them. We have devised a system that is successful in bringing many books and lectures to the attention of our faculty and causes many interesting educational discussions.

When a teacher goes to an educational lecture, he brings back careful notes. These notes are typewritten and reproduced for all the teachers. Then the notes are discussed by any of the teachers who care to do so, with the teacher who attended the original lecture acting as leader. These discussions make a sort of "noon-day" out of the lunch period. Sometimes the school secretary attends outside

meetings and brings back complete stenographic reports which are duplicated for the teachers.

Among the reports last year were: a lecture on "The Teaching of Primary Reading" by Alice Hanthorn, given in New York City; six lectures on "Psychology and the New Teacher" by H. H. Overstreet, given in New Rochelle at the Teachers Club; reports on our own teachers meetings on homogeneous grouping versus heterogeneous grouping in which each teacher gave a summary of an article read on the subject; and a report of a panel discussion on curriculum held at Columbia University under the direction of J. R. McGaughy.

Conclusion—At this point the authors will summarize briefly the value of duplicated materials produced within the school. The points mentioned refer to statements discussed in the text of this paper. For the sake of clarity they are given in outline form:

(1) Values not found in commercial products: (a) work based on the actual experiences of the children. It is personal; (b) reading work an outgrowth of classroom activities; (c) applies directly to the work covered. Provides a means of correcting errors before they become fixed in the minds of the children; (d) provides for children of different learning levels at the same time; (e) testing is done frequently, informally, and in time for remedial work; and (f) inspires creative work and is a means for fostering individual enterprise.

(2) Values in integration: (a) reading materials correlated with all the activities of the primary grades; (b) reading and arithmetic combined in the first grade; (c) booklets provide a means of correlating art, social science, reading, and language; (d) newspaper correlates all subjects; (e) integrates the work between class and class; and (f) keeps parents informed as to school work.

(3) Values to school spirit: (a) keeps classes in touch with one another; (b) keeps classes in touch with general school activities; (c) assists the teacher in remaining a "live" personality, and (d) promotes cooperation between home and school.

AIDS PRODUCED BY DUPLICATING DEVICES

EDITH D. WRIGHT
Principal, Hawthorne School, Houston, Texas

AN INTRINSIC DEVICE is one which is not separate or supplementary but an integral part of the natural process of reading.[1] Learning is never a passive process of absorption; we learn by means of reacting; we learn the reactions we exercise.

With the above in mind, think of duplicating devices in the light of teaching aids. Duplicated material may be used to measure ability, to supplement textbook material, to diagnose special cases, to test speed and comprehension, to remedy individual weaknesses, to make assignments scientific, to show where drill is needed, and to make library books for those who do not have books. These books may be placed on the reading table or before those who do not have books at home.

During these days of economic stress especially, teachers are searching for materials that will aid children in their school work. Also, as teachers are carrying heavier loads, they need material that will lessen blackboard work, eye-strain, and overtime. Many children are not able to buy supplies and practise materials and these must be furnished by someone.[2]

Preparation—Teachers are on the lookout for a way to bring progressive teaching methods to all children. The problem is hardest to handle in a school where the children are under-privileged. There is a genuine need here for useful and necessary aids to help these children and to bring them up to normal standard in the educational process. "How is the teacher going to meet these increased requirements? The answer is *preparation!* It is only thru careful planning of each lesson in advance that the teacher can hope to get thru the day's recitation with any degree of satisfaction." [3]

Finance—The financial question enters into the subject. Manufacturers of duplicating equipment recognize this problem and they have produced workbooks in which the material is ready for reproduction. This process reduces the cost, as one hundred copies may be made from one master copy. Paper is another item of expense. When firms change name of building, form new partnerships, or go

[1] Gates, Arthur I. *The Improvement of Reading.* New York: Macmillan Co., 1927. p. 27.
[2] The national copyright law provides limitations on the reproduction of copyrighted books, tests, and leaflets. These requirements should be adhered to by principals and teachers. For further discussion of this topic see *The Textbook in American Education,* Thirtieth Yearbook, Part II, National Society for the Study of Education, 1931, p. 196-97.
[3] Hale, Florence "Which Way Education?" Foreword of a pamphlet issued by Ditto Incorporated, 1933. p. 1.

out of business, the unused stationery may be obtained and used on the duplicator. This letter paper is usually a good quality.

Reading—As all school work depends upon reading, duplicated materials will help to remedy faults in reading. A remedy is an individual prescription.

With primary children, who are not able to read or write, we know that they must have some way of expressing themselves. The teacher must plan the work most carefully so that these young people may be actively engaged in the learning process. They feel very important when they can see a picture grow on their own piece of paper. They learn to answer questions, to use colors, to get new words, to follow directions, to make and use numbers, and incidentally learn to read.

When the teacher has beginning foreign children, she must so associate the word, object, or picture that these children will not need to think by translating from Spanish or Mexican back into English.

As the teacher follows the pupil's work, he can change lesson plans to meet the needs of the individual child. He will know where to put the emphasis in teaching and drill, and will also be able to know the children with creative tendencies.

Development of aids—The duplicated aids change from grade to grade as the children become more independent in reading. The progressive teacher plans for a wider use of these materials.

Assignments—The assignment material may be diagnostic or remedial in character or it may follow the thought of the recitation. Thru the use of the individual duplicated sheet, the child learns how to study, for he must use the dictionary and the library. He gets no oral directions and so he must learn how to find his way. Self-direction is important in teaching pupils how to study and it is the main goal of the progressive elementary teacher.

Original materials—The use of duplicated material enlivens the school work, because the teacher can use original material which is related to the work of the group, or developed thru the unit studied. The pupils feel a keener interest in the plan, and there is a flexibility which allows the progressive teacher to use material suited to the special group, to special lessons, or to special individuals.

Types of devices—Without attempting to discuss their many applications or outcomes it will be of value to list a few of the many aids which can be made on duplicating devices:

Reading:

(1) Supplementary reading material
(2) Testing material
(3) Spaces to be filled in by "yes" or "no"
(4) Spaces to be filled in with appropriate words
(5) Using words "right" or "wrong"
(6) Circle right word
(7) Matching words with pictures or action
(8) Fill in answer with right number, picture, or number of objects
(9) Work arithmetical problems
(10) Test speed and comprehension
(11) Work problems which develop from day's lesson
(12) Put together cut up animals or pictures.

Books:

(1) Picture books colored by individual child
(2) Alphabet books
(3) Nursery rhyme book
(4) Reading books
(5) Seasonal material, including Christmas, Easter, Washington, patriotic occasions, and sporting books
(6) Calendar for year. Each child colors own calendar
(7) Doll books and wardrobes, colored by child.

School newspaper:

(1) Duplicated and sent at small cost into each home.

General:

(1) Make programs for parties, lunches, patriotic occasions, club groups, P. T. A. meetings
(2) Make tickets for entertainments
(3) Send home directions for making costumes for May fete
(4) Send notes to parents explaining health program
(5) Write menu for luncheons
(6) Make music programs.

Geography Books:

(1) Make books, maps, and charts
(2) Make English books—stories made up about book characters
(3) Make song books for Christmas, for patriotic programs, and for folk dances at May fete.

Original:

(1) Coloring of pictures, scenes, objects, animals, dolls, and flowers
(2) Reading lessons given by class. Put in book form for each child
(3) Making circus parades from duplicated sheets
(4) Drawing a picture to suit a line of a poem or sentence.

Vocabulary:

(1) Enlarging vocabulary by using appropriate words to suit picture
(2) Filling in space with appropriate word
(3) Writing appropriate word or name for picture
(4) Describing picture, person, or object.

DIFFERENCES BETWEEN TYPED AND HANDWRITTEN COMPOSITIONS[1]

JOHN J. FORESTER
Principal, Bradford School, Montclair, New Jersey

SOME EDUCATORS believe that if the typewriter is to be accepted as a desirable instrument for the elementary school, it must be on the basis of its aid to pupil progress in the school subjects and not as an end in itself. Only when it can be shown objectively that the use of the typewriter as a means of written expression promotes learning better than would be possible without the use of such an instrument will the critics recommend its adoption. This attitude is due to a belief that typing as a skill is not needed by the great majority of children. If it can be proved, however, that by using the typewriter as a means of written expression a child learns to read, to write, or to spell better than he could otherwise do when using some other form of writing, then the typewriter should be made available.

Since the children in the Bradford School had all been using typewriters in the national typewriting study, the writer thought it advisable to conduct his experiment in a school where the children had never made use of the typewriter as a part of the regular school work. Accordingly, thru the courtesy of the principal, Albert Hartman, the Watchung Elementary School in Montclair was secured as an experimental center.

Method of investigation—Written narration was selected as the type of school work for investigation. The compositions were obtained from 234 children in the third, fourth, fifth, and sixth grades. During October 1932 each of the classes participating was divided alphabetically into two groups—experimental (typewriting) and control (handwriting). Children of both groups remained in their respective classes and were taught by the regular teachers. The difference was that the "experimental" children used the typewriters for all written work while the "control" pupils used only pencil.

Standardized achievement tests in capitalization and punctuation language usage, spelling, and vocabulary were given all the children during the month of October 1932. The results of these tests showed that there were no significant differences between the experimental

[1] The present study is an outgrowth of participation by the writer in the national typewriting investigation directed by Ben D. Wood and Frank N. Freeeman. The national study has been published as follows: Wood, Ben D. and Freeman, Frank N. *An Experimental Study of the Educational Influences of the Typewriter in the Elementary School Classroom.* New York: Macmillan Co., 1932. 214 p.

and control groups with regard to achievement in the above subject-matter fields.

An intelligence test given in November 1932, and a socio-economic score card applied in February 1933, revealed that the experimental and control groups were approximately equal with regard to these two qualities. In intelligence, the third-fourth [2] grade experimental and control groups had mean ratings of 108.69 and 108.76 respectively. The fifth-sixth grade [2] experimental and control groups had mean scores of 105.56 and 104.23 respectively. Both the experimental and control groups had " very high " ratings in socio-economic status.

In March 1933, a questionnaire concerning the accessibility and use of typewriters outside of school hours by the children participating in this investigation showed that both the experimental and control groups made little use of these instruments outside of the classroom. During the month of October 1932, the experimental group children had twenty minutes of daily practise in typing some special exercises.[3]

Three types of approaches for writing compositions were used each month. The children were given a general topic, an opening sentence, or a beginning paragraph which they were to use as the start of their stories. Both the " experimental " and the " control " pupils wrote about the same topic at the same time. The time limit allowed the children for writing their stories was twenty-five minutes. Mimeographed instructions concerning the introduction of composition topics were given each teacher so that the procedure would be uniform.

There were 64 children in the third-fourth grade experimental group and 54 in the fifth-sixth grade experiment group. These 118 children wrote a total of 2242 compositions between November 1932 and April 1933. Fifty-five children constituted the third-fourth grade control group while there were 61 in the fourth-fifth grade control group. These 116 children wrote 2204 compositions. Each child wrote 19 compositions and the total number of manuscripts was 4446.

Summary of the findings—Five different phases of written composition were studied in this investigation in an effort to find any differences that might exist between typed and handwritten stories. The phases of written composition studied were as follows: length, spelling, sentence structure, vocabulary, and content quality.

[2] Because of the small numbers the third and fourth grade results were grouped together and also the fifth and sixth grade data. Thus in presenting data we shall speak of four groups: (1) third-fourth grade experimental, (2) third-fourth grade control, (3) fifth-sixth grade experimental, and (4) fifth-sixth grade control.

[3] Special exercises supplied by Ralph Haefner, field director of the Elementary School Typewriter Investigation and author of: *The Typewriter in the Primary and Intermediate Grades.* New York: Macmillan Co., 1932. 342 p.

(1) *Length*—The evidence with regard to the length of the compositions leads one to believe that with one month of systematic daily practise and two months' additional work on the typewriter as afforded by the composition writing, the third-fourth grade children can write almost as quickly on the typewriter as by hand. This statement is borne out by the fact that beginning with the compositions written during January 1933, there was not a statistically significant difference between the mean lengths of the typed and handwritten third-fourth grade compositions. The fifth-sixth grade children apparently require only one month more than the initial month of daily practise in order to write on the typewriter practically as fast as by hand. Only in the month of November 1932, were the handwritten fifth-sixth grade compositions significantly longer than the typed stories.

(2) *Spelling*—According to the results of the tabulation concerning the mean number of spelling errors per composition in relation to the mean number of words per composition, the typewriter seems to be a definite handicap.

The use of the typewriter does not appear to make imperative the guarding against any one in particular of the following types of spelling errors: additional letters, transposition of letters, omission of letters, or substitution of letters. The percent of types of spelling errors found in the typewritten stories was practically the same as that found in the handwritten compositions.

(3) *Sentence analysis*—Apparently the typewriter does not stimulate the use of any particular type of sentence any more than pencil. The children in the experimental groups used approximately the same percentage of simple, compound, complex, and complex-compound sentences in their compositions as did the children in the control groups.

Declarative sentences were used predominately in their stories by both experimental and control groups. The percent of declarative sentences used in the compositions written during each month of the investigation ranged from 96.40 to 100.

There seemingly is little difference between the third-fourth grade experimental and control groups in their use of complete, incomplete, and run-on sentences; also, in their ability to punctuate correctly. In the fifth-sixth grade experimental group, however, the typewriter seems to influence unfavorably the ability to use complete sentences and to punctuate correctly. The typewriter does not appear to affect unfavorably the use of incomplete and run-on sentences by fifth- and sixth-grade children.

From the facts available in this study it seems as tho the use of the typewriter makes for shorter sentences when the child is learning to use the machine. After he acquires some skill in his use of the instrument, there is practically no difference in the length of the sentences he writes as compared with those written by children who use pencil.

(4) *Vocabulary*—The use of the typewriter seems to have no significant effect upon the quality of vocabulary used by third-grade children as judged by the Gates list.[4] In April, 87.07 percent of the words used by the experimental group children were found in the first 500 words of the Gates list. During this same month 85.67 percent of the words used by the control group children in their composition writing were found in the first 500 words of the Gates list. The difference between these two percentages was not statistically significant.

In the fourth, fifth, and sixth grades, however, it seems as tho the use of the typewriter has a negative effect on the vocabularies of the experimental group children as judged by the Thorndike list.[5] In the April compositions the experimental group children used a significantly larger percentage of "1A" (first 500) words than did the control group.

(5) *Composition quality*—As measured by the Driggs-Mayhew composition scales,[6] the quality of the compositions written on the typewriter does not vary significantly from the quality of compositions written with pencil. There is, however, a slight difference in favor of the experimental compositions with regard to quality in both the lower and upper grades.

Implications for educational procedure—Since very few significant differences were found to exist between typed and handwritten stories written during the course of the investigation, only trends can be indicated. These unreliable differences or trends will have to be substantiated or disproved by further experimentation carried on under the same conditions as this study was conducted.

A résumé of the differences found between the experimental and control compositions written during the last month of the investigation reveals that the following were in favor of the control group: spelling, ability to write complete sentences, proper use of capitals

[4] Gates, Arthur I. *A Reading Vocabulary for the Primary Grades.* New York: Teachers College, Columbia University, 1926. 23 p.
[5] Thorndike, Edward L. *A Teacher's Word Book.* rev. ed. New York: Teachers College, Columbia University, 1932. 182 p.
[6] Driggs, Howard R. and Mayhew, Alfred F. *Driggs-Mayhew National Scales for Measuring Compositions.* Lincoln, Nebraska: University Publishing Co., 1928. 15 p.

and punctuation marks, and the use of a more difficult vocabulary. Of these differences, the following three were significant: the use of a larger percentage of complete sentences by the fifth-sixth grade control group, the larger percentage of punctuation errors made by the fifth-sixth grade experimental group, and the use of a simpler vocabulary by the " experimental " children of the fourth, fifth, and sixth grades. In the matter of the quality of the content alone did the experimental group surpass the control group at the close of the experiment. Since most of these differences as well as those found thruout the study, were insignificant, there is no assurance that the same differences, or any differences at all, would appear in another similar investigation.

The results brought to light by this study indicate that the use of the typewriter imposes no large handicaps on the children's ability to express themselves in written narration. Furthermore, neatness and mechanical accuracy of margins, word spacing, and paragraphing, coupled with the trend toward better quality of the content in the experimental group compositions justifies the use of the typewriter in third-, fourth-, fifth-, and sixth-grade written narration until further experimentation gives additional information as to its value.

WRITING IS A SKILL which is employed not only in the practical activities of adult life, but also as an instrument in the processes of learning in the school. The child not only learns to write in the school, but he uses writing as a means of working out and recording his thoughts and in carrying out many of the activities required in the school. If the typewriter is introduced into the school, it will also serve, along with handwriting, as an instrument in the performance of school activities.—Wood, Ben D. and Freeman, Frank N., *An Experimental Study of the Educational Influences of the Typewriter in the Elementary School Classroom,* 1932, p. 179.

CHAPTER IX

RADIO AND SOUND EQUIPMENT

EDITORIAL COMMENT

IT IS OFTEN SAID that one learns more easily and quickly thru the eye than thru the ear. This statement was unchallenged before the radio had made such incredulous strides toward perfection. Certainly one may ponder upon the training which is now being given to the ears of millions of listeners. Many types of programs being broadcast today, particularly the radio dramas, require the ear to make many fine distinctions and to transmit hundreds of impressions.

The first contributor to the chapter raises and answers the question: "Should radio be brought into the school?" The second article describes the types of radio programs, pointing out many essentials in good radio technic and ways to make broadcasts suitable for school use. Two contributors tell how to integrate and coordinate radio broadcasts with the regular school activities. Another suggests the possibility of teaching children how to evaluate critically the worth of broadcast materials. Contributors from Cleveland join in describing their use of the radio for instructional purposes. The best of the available programs and the broadcasting of educational stations are summarized in one contribution. A survey of the sound equipment and suggestions for improvement conclude the articles on the radio as an aid. The final article tells of an interesting experiment in improving the speech habits of children thru the use of phonograph records.

The school has for years used sound equipment in the form of the phonograph. Judging from the current professional literature, phonograph records are used chiefly in teaching music appreciation. It is to be regretted that no articles on this type of instruction were received. There exists, however, a whole field for the phonograph record which is apparently little utilized in America, altho British teachers use it rather extensively. This use is in connection with the teaching, the diagnosis, and the correction of language habits. Into these fields elementary-school principals might very well explore.

The bibliography at the end of the chapter will prove helpful in further study of the general topic.—*Editorial Committee.*

SHOULD I BRING RADIO INTO MY SCHOOL?

CLINE M. KOON
Senior Specialist in Education by Radio, U. S. Office of Education, Washington, D. C.

AS EXECUTIVE HEAD of a school, the principal is called upon to make innumerable decisions on questions all the way from petty routine to vital human relationships. His decisions will be determined by a variety of factors, such as past practise, attitude at the moment, and reflective thought. It is a wise principal who can ignore the second item and quickly decide whether or not the question is of sufficient importance to merit reflective thought. Reflective thinking requires more time and effort before the decision is made, but frequently much less afterwards.

All life is a series of adjustments between man and his environment, and education in its widest sense is the process designed to facilitate these adjustments. As the relationship between man and his environment changes, the functions of education change accordingly. Education is expected to do more than this. Since the individual does not go to school all of his life, education is intended to enable him to make adjustments to his changing environment long after he has left school.

The past fifteen years have brought about many important economic and social changes. The era of prosperity following the World War witnessed vast expansion in business and commerce. This expansion, according to the President's Research Committee on Social Trends, was accompanied by mass production, specialization of labor, centralization of population and wealth, increased leisure, a reduction of the regulatory influence over behavior by the church and family, and a larger degree of control by industry and government.[1]

The present economic depression has drastically reduced the schools' budgets before they have been able to master the complex problems brought on by the period of unprecedented economic prosperity. The unfathomed effects of motion pictures, radio, and automobiles, which became so common during prosperity, continue even to this day. Thus it will be seen that our rapidly changing social order has greatly complicated the educational process. The learner must master and coordinate a bewildering number of facts. He must explore almost unbounded realms. The school must consider the influence of the motion picture and radio—an influence which we are beginning to suspect is far greater than we were inclined to believe.

[1] President's Research Committee on Social Trends. *Review of Findings.* New York: McGraw-Hill Book Co., Inc. 75 p.

With so-called liberalism strongly influencing the pupil's concept of social values, the teacher needs the aid of science to serve the ends of education in this new age which science has done so much to make complex. Research studies and experimentation have demonstrated the practicability of using both films and broadcasts in schools.[2] Because of its general availability, however, the broadcast is more suitable for immediate general use on the elementary-school level.

Without being unduly influenced by any preconceived opinions either for or against the educational use of radio, the principal should make the same open-minded, scientific approach in his study of radio that he would in his study of any other major question in education. This is easier said than done. He probably feels that he is already well acquainted with radio. He remembers when it was little more than a toy of wires, tubes, gadgets, and knobs. Later it became a musician and clever entertainer which used its talents as a means of gaining entry into his home to try to sell him something. If he refuses to admit radio into his home, probably his opinion of it is based upon the noise made by his neighbor's radio. If so, he may be prejudiced against radio and refuse to give it serious consideration.

On the other hand, a principal who begins an open-minded consideration of the numerous and varied educational possibilities of radio may become so enthusiastic that he will overlook the important problems involved in the use of radio for educational purposes. He may lose much of its potential educational value by failing to integrate the broadcast lessons with the curriculum of his school.

In the final analysis, radio must enable the teacher to achieve the objectives of true education more effectively than he could otherwise, or it has no place in the classroom.

Principals are aware that altho certain fundamentals of education, such as the mastery of the tools of learning and exact sciences, remain comparatively fixed from generation to generation vast bodies of information need to be changed from time to time in harmony with the changed environmental conditions. Broadcasts in Oakland, Cleveland, Chicago, and other cities have demonstrated that if the programs are prepared for a particular school system, they can be used as effective classroom aids in the teaching of the tool subjects within that system. It is within the area of the changing subject-matter, however, that radio gives promise of being most useful. Subjectmatter becomes crystallized in textbooks, and methods become habitual and fixed. Properly infused broadcasts can bring just enough of the outside world into the classroom to keep the school attuned to the times.

[2] See Chapter X of this yearbook.

If the principal is interested in considering what experienced users of school radio have to say about its value as a classroom aid, he will find their ideas cluster around the following headings:

(1) To enrich the curriculum with current supplementary material and first-hand information
(2) To vitalize classroom instruction by supplying new points of view designed to arouse and intensify pupils' interests
(3) To increase the public appreciation of the work of the schools and unify the educational forces of the state and nation
(4) To develop pupils' appreciation of good radio programs by guiding their home listening and encouraging collateral listening just as collateral reading is encouraged
(5) To serve as demonstration lessons for teachers by presenting carefully prepared broadcasts by master teachers
(6) To supply entertainment and news outside of school hours
(7) If centralized radio-sound equipment is installed, to facilitate program and communication services within the school building.

Some principals are of the opinion that centralized equipment about doubles its value to a school. Taylor reports that his centralized radio-sound equipment enables him to conserve and apply his time more effectively.[3] Kefauver and Hand find that it is practicable to use centralized equipment for a considerable variety of administrative and supervisory purposes.[4]

After careful investigation and experimentation with a borrowed receiving set, the principal may decide to bring radio into his school. If so, he will be faced with the problem of securing funds to purchase the necessary equipment. Parent-teacher associations and other organizations have been very helpful in many communities. As pointed out by Darrow, principals who want to secure radio receiving equipment will usually be able to do so if they sell the idea to their communities.[5]

After careful consideration, the principal may decide not to bring radio into his school. In the course of his investigation, however, he will probably realize the tremendous power of radio and will conclude that as an educational leader in his community he has a responsibility in regard to the pupils' use of radio outside of school hours. He will probably resolve, also, to watch the further growth of radio, for in it he will recognize a powerful potential friend, or foe.

[3] Taylor, L. F. "Administration and Supervision by Radio." *Education by Radio* 2: 97; October 18, 1932. Washington, D. C.: National Committee on Education by Radio, 1201 Sixteenth St., N. W.
[4] Kefauver, Grayson N. and Hand, Harold C. "Effectiveness of Sound Distribution Systems." *School Executives Magazine* 51: 295-96, 325; March, 1932.
[5] Darrow, B. H. "How Schools Equip for Radio Reception." *High School Teacher* 9: 112-14; March, 1933.

PLANNING FOR EFFICIENT USE OF THE RADIO

GILBERT M. BANKER
Supervising Principal, Union Free School, Hillburn, New York

SOME SCHOOLS are making wide and valuable use of what is "on the air." They have a program. Such a plan of action is one of the essentials for success in the radio field where the opportunities are so great for wasted time and effort. The purpose of this article is to describe some of the procedures which have been used more or less successfully in one school.

Preparing general plans—At the beginning of the year a teachers meeting is called with the announced purpose of "doing something" about the use of radio in the school. The first question discussed is as follows: "How can we justify the use of school time for listening to radio programs?" Usually the most satisfactory answers are found in the form of the definite aims and objectives of radio experiences. Too much emphasis cannot be placed on the importance of having these objectives clearly outlined and fully understood by all teachers who use the radio in the classrooms.

The aims and objectives of radio education are usually not clearly stated by a large discussion group. It becomes necessary, then, to appoint a committee of those most likely to continue their interest in radio, and whose duty it is to complete the formulation of the objectives for which the entire faculty hope to work. The committee should so concentrate upon its work that maximum interest and cooperation of the teachers will be obtained.

Another committee should investigate the range of programs suitable for use during school hours. The information gathered by this committee should be available for every member of the faculty. In this way there may be "long range" planning for such programs as the Damrosch Music Appreciation Hour, the American School of the Air, or even in connection with the local programs listed in the daily and Sunday papers. The committee on objectives may find it valuable to cooperate with the one on programs. The first group must bear in mind the types of programs to be selected before it can state aims and objectives, and the program committee must keep in mind the objectives in choosing programs.

Another faculty committee might interest itself in the after-school and evening programs of educational value, especially for high-school pupils. It is very difficult to get older pupils to listen to general cultural and educational programs while at home. Either they or the family can find time only for current radio thrillers or the latest crooning and jazz dance tunes. However, programs of great value and

interest to classes in literature, history, civics, science, music, art, and dramatics are often available among the evening broadcasts. Unless pupils know about these opportunities they are quite unlikely to profit by them except thru sheer chance.

Integrating broadcasts and school activities—With the objectives clearly stated for the radio classes and with the programs selected, the next problem is that of providing the time and place for the reception of the broadcasts. In our local schools one full hour weekly is allotted for radio. Usually this time is spent in listening to the two widely known broadcasts already mentioned with an extra half-hour allotted to preparation, discussion, and review.

The hour assigned to radio is made up of two half-hour periods from 2 : 00 to 2 : 30 on Thursdays and from 11 : 30 to 12 : 00 on Fridays. Homeroom teachers may use additional time from their own periods whenever they feel that they can justify such extra time. Departmental teachers may use unscheduled hours for radio programs if they can arrange with other teachers whose classes come at the same hour. Locally a great deal of freedom is allowed, and as far as the writer knows has been profitably used with a minimum of friction between teachers. Cooperation has been splendid and the occasional shifting of classes has been accomplished satisfactorily to everyone. It is believed by both teachers and administrators that the school system should not become so rigid that every activity of the school must conform to unchangeable patterns.

The teachers are responsible for the preparation of pupils before a program, for conduct during all programs, and for discussion and review of the programs heard. The preparation of pupils before a program is a problem deserving serious consideration. Unless it is so considered, there is danger that the time used for the program will be largely wasted. In advance of the actual broadcast the pupils must know why they are listening to a program and what to listen for. Strangely enough so few teachers seem to appreciate fully the need for this preliminary preparation.

When pupils listen to a program—such as a symphony orchestra—without any introductory instructions, they are likely "to grow" musically no further than to say that the music was "pretty," "slow," or "sad." This very simple and superficial progress may take place in spite of rather full explanations and comments by the radio announcer during the program.

We have found it necessary to discuss programs with the pupils several days in advance. For example, for the final concert of a series of symphony orchestra broadcasts the procedure begins several days before with the listing on the blackboard of the selections to be heard.

The composers' names are listed, and if they are unfamiliar, pupils are given the opportunity to make special reports to the class.

The blackboard also provides a place for our list of questions to be answered after we hear the program. Here are questions which might be prepared for a particular program:

(1) An overture is a musical ..... to an opera or a play.
(2) The word "overture" means .....
(3) What is an opera?
(4) Why do some plays and operas have overtures?
(5) A lively overture leads us to expect an opera with a/an ..... story.
(6) The overture to "The Merry Wives of Windsor" is ..... in mood.
(7) The first part of the overture to "The Merry Wives of Windsor" suggests the ..... of the forest at midnight.
(8) The introduction to the third act of "Lohengrin" suggests that ..... events are about to happen.
(9) Would you expect a tragedy or a comedy after hearing the overture to "The Marriage of Figaro"?
(10) Name a selection from this concert which was not intended to introduce an opera or a play.

Several of these questions have been taken directly from the manuals published by the broadcasting company, while others were suggested by the teachers or the pupils. The entire procedure mentioned never fails to arouse interest in and a feeling of readiness for the future program. During the program each pupil has something to do other than merely to sit passively.

A second preparatory procedure is that of familiarizing pupils with the principal themes of the scheduled compositions. Sometimes an excerpt of the theme, as published in the radio manual, is copied on the blackboard and pupils hum or sing it until it is familiar. Sometimes teachers play the themes on the piano or some other instrument. We find that pupils remember many musical themes very well and get a great deal of pleasure from recognizing them, often many months later. We believe that this recognition carries over into adult life, increasing pleasure and appreciation of later musical experiences.

A third way of avoiding mere passive sitting during a radio concert is to provide pupils with a piece of cardboard 9 inches by 12 inches, two or three sheets of drawing paper, and a pencil. Each pupil is urged to express thru pencil drawings as best he can the picture that the music presents to his imagination. Some of the sketches produced during these music periods have been truly remarkable.

Following each concert the teacher devotes a few minutes to what might be called review or drill work. The questions that preceded the lesson are answered and discussed. General impressions, likes, and dislikes are expressed; and, before the interest dies, the preparation for the next program is begun.

Avoiding misbehavior—Conduct during programs may well become a serious problem during radio broadcasts. At the same time it offers an excellent opportunity for education along lines of courtesy, character, and consideration for others. In our school the problem has been met by making participation in programs a voluntary matter. Those who do not wish to listen to the radio are provided with a place and the supervision necessary for study. This plan challenges each teacher to make the radio lesson so attractive that not a single pupil will elect to " miss " the program. Too much of our education is compulsory. It smacks too much of the stern " pedagog " and the prison. It is too easy for the teacher to dole out the textbook which some authority has written. Voluntary participation in radio programs is an " about face " which is proving to be a refreshing and an effective educational device.

Our worst disciplinary trouble was in securing quiet during concerts. Scuffling feet, creaking seats, whispering, fluttering papers, dropping pencils and other miscellaneous objects prevent the full enjoyment of music. These conditions are often very serious when several classes use an auditorium or other common room during concerts. Several factors in control operate in our school. First, since attendance is not compulsory, we have no one forced to be present and therefore many troublesome persons are eliminated. Second, during class periods before each concert the necessity of quietness is repeatedly discussed by the pupils and teachers. Disturbances that do occur during a concert are also discussed in the review classes. The discussion is always on a friendly basis, the sole criterion being consideration for others who are listening. By general consent the one rule of conduct is absolute silence during the entire radio concert. Offenders who repeat their annoyances deliberately are asked to meet temporarily with the supervised study groups.

During the broadcast teachers stand or move silently in the rear of the room. Any temptation to violate the silence agreement is thus, partly at least, eliminated by their presence there. Any noises that do occur are usually stopped promptly by the teacher's moving toward their source. Discussion, punishment, or removal from the group always takes place after the program is finished. Teachers are as careful not to break the silence as are the pupils.

Outside sounds seldom annoy, even with opened windows. Our one annoyance was a neighbor who regularly used a defective vacuum cleaner at the same hour when we listened to programs. The results were disastrous. A little careful investigating, an explanation of the situation, and a plea for aid resulted in the elimination of this interference.

By making clear to pupils just what is expected in the way of conduct, by having present only those who really want to be present, by planning for all disturbances that may arise, by providing adequate sympathetic supervision, and by seeking understanding cooperation of all concerned, we manage to have very few interrupted concerts and very few problems of discipline. The planning and preparation before the concert is the basic factor in the situation.

The very young children of the elementary school present a difficult problem in connection with radio programs, since they tire easily and become restless when they sit quietly and silently for long programs. They also seem to experience difficulty in understanding the spoken word, especially during musical concert series. In our opinion it is impossible to justify the use of school time for radio with pupils of the third grade or below. A possible exception may be the programs of the American School of the Air arranged especially for young children.

Checking results—One further problem in any plan for the use of radio in the school is that of evaluating the results. Harrison [1] and other investigators have done some research along these lines, but every school must attempt to measure its own results. The teachers who listen to the programs with the pupils should review and test pupils on the radio programs as carefully as they review and test the learning that takes place in other classes. Unless the result of the radio programs is measured and evaluated in some way, there will be no possible manner of deciding whether the objectives decided upon have been accomplished. The entire procedure may be only amusement, entertainment, and wasted time during school hours. Can we justify such uses of the taxpayers' money?

[1] Harrison, Margaret "Pioneering in New Fields—Radio in Rural Schools." (Abstract) *Proceedings, 1930*. Washington, D. C.: National Education Association. p. 434-37.

IT IS GENERALLY BELIEVED that a greater and more lasting impression is secured if the pupil experiences the subjectmatter thru several senses. Thus if he sees, hears, and feels an object, he remembers it better than if he only hears it. Going upon this assumption, radio broadcasters have endeavored to introduce "pupil activity" into their radio programs.—Lumley, F. H., see p. 412 of this yearbook.

INTEGRATING RADIO PROGRAMS WITH SCHOOL SCHEDULES

JULIA M. MCCARTHY
Viceprincipal, Marcy School, Detroit, Michigan

MODERN EDUCATORS, alert at all times for new educational tools to enrich the curriculum and to vitalize instruction, have recognized the value of the radio in the enrichment of school activities. This enrichment is in the form of lectures, dramatizations, and musical numbers. These types of programs assist the teacher in explaining presentday activities; they help the children to recognize the achievements, the interrelation, and interdependence of nations. They have a tendency to stimulate further study along the lines of the broadcast, to foster creative thinking, and to bring about a closer integration of school activities.

From the standpoint of entertainment the radio is an established fact but its use as an educational aid must be approached slowly and scientifically. This supplementing classroom device brings with it many problems. Some of the more important problems are: (a) the selection of programs with a minimum of advertising, (b) the inadequacy of school equipment, (c) the procuring of desirable programs within the range of receiving equipment, (d) the tendency toward standardization not consistent with present educational trends, and (e) the inflexibility of both school and broadcasting schedules. With these problems in mind we shall consider how to make the available radio programs as effective as possible.

Preliminary planning—The ideal equipment would be a radio in each classroom, not only with outside contacts, but also a hookup with a central broadcasting station within the school. This plan enables material pertinent to a particular school or community to be broadcast without conflict or expense to outside stations.

Before setting up any procedure the principal needs to know where information on radio programs may be found.[1] The following are some of the sources of information: the American School of the Air presents, over the Columbia Network, programs including material for these subjects: literature, history, music, elementary science, and geography. The *Teachers' Manual and Guide Book* which is issued each year by the Columbia Network gives a short résumé of the broadcast and it also designates the visual aids which may be used with the broadcast. The Damrosch concerts, purely musical programs, are broadcast by the National Broadcasting Company. They too, issue

[1] See the article by Tracy F. Tyler in this same chapter.

a very fine teachers' manual. The Ohio School of the Air conducted by the Ohio State Department of Education broadcasts over Station WLW (Cincinnati) and WOSU (Columbus). Their broadcasts are similar to the American School of the Air except that they are more directly concerned with Ohio schools. The Cleveland public school broadcasts are sent out by Station WTAM and are typical of a local broadcasting system designed primarily for public school children. The University of Michigan Broadcasting Service is typical of the college type of service. In addition to the foregoing, the principal should watch the local newspaper announcements for outstanding events.

In our school, the programs and guides for the broadcasts are placed in the school library and they are available to the teachers at all times. They are listed by the library staff, together with reference books, pictures, and slides on topics or units that the teachers in the building may request. Sheets are provided for this purpose, with the following headings:

Room No. Name of Teacher	Unit of Work	Books	Slides and Films	Stereographs	Pictures	Museum Material	Radio

Organizing the classes—Our school auditorium, which has a seating capacity of 157, is equipped with a radio. Regular auditorium classes meet every thirty-three minutes. These classes range from 45 to 100 children.

Careful planning is necessary so that the maximum benefits may be derived from the use of the radio. When a teacher wishes to have a class, group, or individual attend a particular broadcast, he makes arrangements with the auditorium teacher. The auditorium teacher keeps a schedule posted so that we know at all times how many children and what grades are to be present at each broadcast. It is necessary in many instances to send the regular auditorium classes to another room during the broadcast. The playroom can be used if the weather permits the health teachers to take their classes out of doors. If the weather is inclement other arrangements must be made.

Preparing the pupils—If the children are to receive the maximum benefit from the radio, it is necessary to apply the same principles of teaching as are applied in other subjects. It is, therefore, important that before a class attends a broadcast a proper background should be built up to aid the children in interpreting the material intelligently.

The guides sent out by the broadcasting companies explain the material to be broadcast so that adequate preparation can be made

for the programs. The teacher whose subject is to be broadcast prepares the children for the broadcast. In some cases more than one teacher participates in the procedure. For instance, in a program entitled "Stories for the Primary Grades," of the American School of the Air, the literature, music, and the health teachers help with the pupils. In the program entitled "Around the World in Music," the social science, music, health, literature, and the homeroom teachers participate in the preparation.

During and after the broadcast—The teacher, whose subject is being broadcast, is usually present in the auditorium during the program to answer questions that may arise. If this is not possible, or in a case where several grades are involved, the auditorium teacher is in charge. In some cases either pictures from the Children's Museum or slides from the Visual Education Department supplement the radio. In this way the children not only hear but see, thereby making the instruction more effective.

Many times excellent programs are given outside school hours. These programs are "covered" by radio reporters from the various rooms. The radio stimulates further study of a subject but this is not a very definite measuring device. In order to check the effectiveness of the instruction various procedures have been tried, depending to a great extent upon the type of broadcast. The following are typical: dramatization, reports, discussion lesson, original music, poetry and, in some cases, informal tests.

Summary—From the foregoing simple plan we have found that radio as an integrating factor can be effective, but it requires more flexibility than ordinarily is considered possible. The problem of the school to keep pace with the ever-changing world, is given decided help by the use of the radio, as it is a medium for explaining ways of living and showing present trends in thinking. It stimulates interest in school and we hope that it will help in raising the standard of demands for radio programs outside school hours.

THE INDEX at the end of this yearbook is an aid to study and to research.—*Editorial Committee.*

IMPROVING OUR JUDGMENT OF BROADCASTS

FRANCIS K. STROHOEFER
Principal, Public School No. 8, Bayonne, New Jersey

THERE IS LITTLE DOUBT as to widespread interest in the radio. The public listens and receives much to think about. Some of this information may be backed by motives that need to be received with skepticism. In other words, in listening to the radio one should acquire the habit of discrimination just as a good reader reads the daily newspaper and uses judgment in what he reads. Many radio statements, particularly advertisements, are so exaggerated that one must be careful lest he be misled. One function of the school is to develop discrimination. In current events pupils are taught to weigh carefully what they have read and to get many viewpoints before passing judgment or forming a personal opinion. Open-mindedness is stressed in dealing with all controversial questions. We help pupils to discriminate between important and non-important social problems. Styles of writing and values of reading are studied. Thus thru education we learn to pick out and to enjoy the better opportunities of life.

Possible values of the radio—Today simply by turning the radio dial one can tune in many stations with a great variety of programs. But after listening to many broadcasts, the conclusion is inevitable that there is more need for discrimination in what is heard than in what the average person reads. The radio seems to dramatize its message more strongly than does the daily newspaper. Personal interests are studied so as to make an irresistible appeal to the listener. Many delightful programs are freighted with convincing advertisements and suggestions. Discussions and talks are broadcast in ways designed to make them acceptable as positively correct. While many statements are true, one often listens to advice and to opinions that need further consideration before final acceptance.

The radio has brought to all of us further interest in oral expression. We learn the need of care in tone, pitch, and control of the voice. There are some radio voices which we like to hear. President Roosevelt's voice always has a pleasing and convincing effect on many listeners. There is something in his voice that ornaments his talks. As with speakers, so with singers, listeners come to appreciate fine tonal qualities.

There are other values one may overlook in listening to radio programs. One may not hear an important discussion or may overlook a highly desirable musical or dramatic program by carelessly

turning on the radio. As one has limited time to read all the daily news, he develops skill in searching for important or outstanding news items. So, too, with so many programs one should develop the habit of discrimination in choosing the radio selection of the moment. This selection then becomes the means whereby the listener discriminates as to the accuracy of facts, the mastery of the form of expression, or other qualities that make the program a pleasing or displeasing one.

Our experiment—Primarily to attempt to develop the discriminate listener and possibly to improve the expression of the pupils, our school purchased, from the school entertainment fund, a portable radio and a microphone. At first it was thought that one of the toy microphones advertised at less than one dollar would be satisfactory when attached to our new radio. However, thru the suggestion of a local radio dealer, we were able to get, at a reasonable price, a good microphone and by attachments connect or disconnect the microphone for use either in classrooms or the auditorium.

Special schedules were arranged for the upper grades to use the radio and the microphone. The teachers were given suggestions as to the use of the instrument as a definite means of attempting to improve the opportunities of the pupils for the practical everyday experiences.

Altho each teacher was given full freedom to make his own plans, the plans followed by the various teachers were somewhat similar. Interest in radio programs was first developed by having the pupils tell of the programs they liked. The reasons for their selections were noted. The need for care in choosing programs each day was developed by having the pupils bring in the daily lists published in the larger city papers. It was not difficult for them to understand that they might overlook a good selection by not first studying the newspapers before tuning in. The pupils were given practical illustrations during class periods by turning the dial to get an idea of the many possible selections at any given hour.

Assignments were made that required the pupils to listen to programs at home and to give oral reports in class. These reports were good materials for language teaching. The teacher aroused interest in many current events, forms of entertainment, and in critical reports of program details such as voice quality, accuracy of facts, musical appreciation, and new knowledge.

The pupils were not only encouraged to be discriminate listeners of radio programs that were received from broadcasting stations but to broadcast themselves simple programs that would be arranged by

class groups. This practise led to more careful listening to the programs as to content and manner of production. In these activities the loud speaker was placed at the front of the room and the microphone, connected with a long wire under the door, was placed outside the room or in a far corner behind a screen. The class program usually consisted of selections two or three minutes long. Topics that had been studied as part of the regular class work were discussed over the radio by the different pupils. The class listened and took notes of what the speaker said. The topics might be of geographical, historical, or other interest. After the class broadcasts, the errors, omissions, and doubtful statements heard, were discussed by the pupils. Some outstanding errors occurred or were deliberately made to see if the class was alert.

In these class activities two factors of a radio talk were found: (a) the importance of being careful in stating facts, and (b) the possibility of hearing erroneous or doubtful facts and accepting them as true. The class discussions and the mental alertness during the reception of programs led to discrimination and critical reception of programs. There was evidence also that the same skepticism carried over to the programs heard at home.

Other important outcomes—Teachers found it necessary to develop in the pupils a tolerant attitude in criticizing others and a sense of fairness when the listener doubted the accuracy of any statement. Doubtful issues were checked from textbooks or other authorities. If no definite information was available, the broadcaster was asked to give his authority for such facts in order to help the listener to make his judgment.

Another outcome from the use of the microphone was the improvement in speech. It was interesting to see how many pupils became unusually careful in their expression when they went to the microphone to speak. They seemed to feel the need of careful enunciation so as to be heard correctly. Anyone who has broadcast knows the feeling and need of correct enunciation and pronunciation. There is no doubt that every class using the microphone became more conscious of the use of proper speech.

This experiment has shown that the use of the microphone and portable radio in the classroom can become as valuable in helping the teacher as the victrola, the moving-picture machine, or the weekly printed news sheet.

RADIO INSTRUCTION IN CLEVELAND

H. M. BUCKLEY
Assistant Superintendent, Public Schools

WILLIAM L. CONNOR, *Chief*
and
GERTRUDE CELESTIA HAWKINS, *Research Assistant*
Bureau of Educational Research, Public Schools, Cleveland, Ohio

SHORTLY AFTER inaugurating, in 1929, an experiment in classroom instruction by radio, Superintendent R. G. Jones wrote: "I have reached the belief, thru observation and experience, that radio can be satisfactorily used to distribute educational practise and educational material to pupils in classrooms. It remains to be demonstrated that this belief is well founded." [1] This article will tell briefly of the nature and success of the Cleveland school radio program.[2]

General description—The radio lessons began in 1929 with the broadcasting of second- and third-grade arithmetic. Since that time lessons have been sent out over the two local commercial stations in arithmetic, music, social studies, elementary science, and art appreciation.[3]

In beginning the work it was clear that two types of technic in teaching were possible: the lecture and the intensive classroom recitation. The experience of teachers, particularly in the elementary school, did not indicate that the lecture would be the best approach. Therefore, the intensive recitation procedure with the maximum of pupil participation was the method finally chosen.

The plan required a number of essential steps, (1) the careful planning of lesson units by a master teacher or specialist; (2) the try-out of the lessons with representative pupils; (3) the preparation of revised lesson units; (4) the mimeographing and distribution of materials to the schools; (5) the preparation of each class for the broadcast by the classroom teacher; (6) the broadcast by the specialist with the class following directions, listening, answering out loud, writing, and otherwise participating; (7) follow-up of the lesson by the classroom teacher; and (8) periodic tests and examinations.

[1] Jones, R. G. "The Radio as a Medium of Practical Instruction in the Schools." *Nation's Schools* 5: 55-57; January, 1930.

[2] For further details consult: Jones, R. G. "Broadcasting to the Schools of a City." *Radio and Education.* Chicago: University of Chicago Press, 1931. p. 83-92. Also, Baker, Ida M. "Radio Lessons in Arithmetic." *Education on the Air.* Columbus: Ohio State University, 1931. p. 158-65.

[3] Since August, 1929 the Bureau of Educational Research has published several bulletins dealing with radio instruction. For example: Connor, W. L. *Results of Arithmetic Tests for Radio Classes, First Semester, 1929-30.* Bulletin No. 47, and Hawkins, Gertrude C. *Report of Radio Music Test Given to a Limited Number of 4A Classes, June 1933,* Bulletin No. 6.

In no subject has there been any attempt to present all of the work of a semester, or even of a week, by the radio. The work has been rather in the nature of a supplement to the work of the teacher. The lessons have been prepared by experts in each field. The major understandings or high spots have been given in the radio lesson, with the assumption that the teacher will in each case fill in the details and adapt the content and methods to the needs of individuals and groups of pupils. It is a rare lesson that will meet the interests and needs of even fifty pupils, without many fittings and trys on the part of the classroom teacher.

Evaluating the effects on pupils—The bureau of research set up a testing program in which a group of schools receiving the radio lessons in arithmetic were pitted against an equal number of non-radio schools. As would be expected, in both sets of schools, arithmetic received unusual attention, time, and effort, so that the achievement rose in both groups of schools. The results of testing by the bureau of research have been summarized as follows: "There is little evidence in the *measured results* in arithmetic to show that radio teaching is productive of superior results when compared with teaching under *intelligent supervision* administered without its aid."

While the radio lesson in arithmetic is too fast for the dull pupil and too slow for the bright pupil, this is not so true in the case of music. Here the pleasant speaking voice with good diction, resonant singing voice, able musicianship, intelligence and knowledge of the subject, love for music, ability to feel an audience and play up to it with dramatic power—here the personality combines with the subject in such a manner as to make the radio effective to large numbers. The bureau of research report summarized the estimates of a majority who participated, as follows:

> Teachers and principals are almost unanimous in the belief that radio instruction in the field of music seems to present very definite advantages; that the use of the carefully planned programs, prepared by specialists, brings real quality to the music work. And quality in music is as important as quality in eggs. These programs may be, and nearly always are, presented artistically and interpreted so clearly as to delight both teachers and pupils. Music thus becomes a challenging and an interesting subject for its own sake.

An attempt was made to measure the effects of the radio in seventh-grade history by setting up radio and non-radio groups. The results were slightly favorable to the radio classes. However, the difficulty of controlling several factors makes it inadvisable to accept this evidence as conclusive.

Evaluating the effects upon the teachers—As a supervisory instrument, the radio has almost unlimited possibilities. The lesson is care-

fully planned. Expertness is projected and sensed in many classrooms. The limited time compels the elimination of the non-essential, and causes the important items to stand out. Pupils and teacher must be ready, must concentrate, follow instructions accurately, not expect facts and questions to be repeated endlessly; interruptions and confusion are eliminated. The accurately prepared radio lesson, moving to a definite goal without wandering, loss of motion, or irrelevant discussion, serves as a challenge even to the able teacher.

Many persons have expressed the belief that the success of radio instruction might reduce very substantially the need for teachers and supervisors. There is no evidence in any of the work that this is possible. There is considerable evidence that the supervisor of arithmetic can perform his function in the school system quite as well by radio as he can thru teachers' meetings and room-to-room visiting. There is no evidence as yet that he can do a better job by means of radio. On the other hand, in a subject where the quality of the sound itself is as important as it is in music, the radio probably has a very definite place as a medium both for general supervision and for classroom instruction.

Conclusion—We may state then, that the radio gives little promise of becoming a substitute for the classroom teacher. At its best, the same radio lesson cannot be tailor-made to fit the needs and interests of the dull and the bright. Not only the quantity, but the quality of subjectmatter must vary with the ability levels of pupils. On the other hand, the radio has much to offer where the lecture-listening method is effective. The knowledge and skill of the specialist can be extended to a wide field. Were all buildings in a system connected with headquarters by wire so that more time would be available, it would soon be discovered that phases of a subject might be presented in mass directly to pupils, and all of the lessons could be outlined for the teachers. Model lessons could be given by the expert supervisor directly to teachers, with suggestions for adapting the work to different ability levels. Unity, inspiration, and guidance would come to the teachers who would in turn become more effective stimulators of learning because they were learning also. Certain types of testing to check on minimum essentials could well be uniformly administered by wired radio. Experience with the radio in Cleveland for classroom instruction, altho proving its limitations for this purpose, has revealed a large field for supervisory purposes.

For the benefit of those who are particularly interested in what the specialist may say in a radio lesson, the scripts of a science and a music broadcast are appended:

RADIO SCIENCE

Lesson No. VIII "YEAST" Sixth Grade

Good morning science classes. Trees, garden flowers, wild flowers, and vegetables are all plants, aren't they? Name as many trees, flowers, and vegetables as you can in the next 10 seconds. (10 seconds) You certainly know the names of a great many plants. Write the word plants—p-l-a-n-t-s. Write it high on the blackboard, for everything we are to study today belongs to this great group of plant life. You have seen many of the plants that you just named, haven't you? You have seen them, not only because they are common, but because they are large enough to be seen.

There are, however, many plants so small that we cannot see them with the naked eye. They are so small that we would not know anything about them were it not for the microscope. The microscope makes them appear much larger than they really are, and in this way we can study them. Today we are going to study about one of these small plants—yeast. Will the teacher please write the word yeast on the board—y-e-a-s-t? Remember these yeast plants are so very small you cannot see them with the naked eye. They are so small you cannot see them with your magnifying glass. If you looked at them thru a compound microscope, you would see that they looked similar to the drawing your teacher has on the board. They are egg-shaped. Notice the one to the left. Do you see it is shaped something like an egg? Yes, not quite round, but oval in shape. It has no color and in fact is nearly transparent. You can see this yeast plant has no leaves, no stem, and no roots. It is made up of just one cell. Of course then it will have no flowers, so we call it non-flowering. Can you think of any house plant that has no flowers on it? How many thought of the fern? The fern has no flowers on it either. All plants that have no flowers are called non-flowering.

You are probably wondering why some of these one-celled yeast plants have little swellings extending out from them. Point to some of these swellings in the drawing on the board. (5 seconds) This is the way the yeast plant grows. At first a little swelling appears on the yeast cell. This is called a bud. Soon one of these little projections, or buds, will break off and grow to be a full-sized yeast plant. This method of growing or multiplying is called budding. Write—grows by budding. (5 seconds) As this budding continues, clusters of yeast plants are formed as you see in the drawing.

On the table is a piece of a yeast cake. Will someone show it to the class? (3 seconds) In this yeast cake are thousands of tiny plants massed together. Then, too, these are mixed with a little flour so that the flour and the many, many microscopic yeast plants form a cake easily seen. Do you think the yeast plants in this yeast cake are growing?—No, they are not growing. They are alive, however, and will grow if we give them the right kind of food.

Would you like to try an experiment to see what takes place when yeast plants grow? Will two pupils go to the table? (5 seconds) Stand back of the table where you see a test tube, a cork, a teaspoon, and a glass. (5 seconds) Do you see a pan of water? This water is lukewarm. Now fill the test tube about three-fourths full of this lukewarm water. Use the empty cup as a dipper. (10 seconds) Set the test tube in the glass. (2 seconds) This will hold the test tube for you. Crumble the fourth of a yeast cake into the test tube. (10 seconds) Add to this a teaspoonful of sugar. (10 seconds) Put the cork into the test tube. Press it in rather tightly. (5 seconds) Pick up the test tube and shake it well. (2 seconds) Did you shake it well so that the sugar and yeast are thoroly mixed? Put the test tube back in the glass. Will one of you be responsible for watching this? You may both be seated. (5 seconds) Before this lesson, I prepared a test tube in the same way—with yeast, sugar, and lukewarm water. I am going to shake this test tube again.

Oh—What do you think happened? The cork popped out!

This shows us that something is taking place when yeast plants are growing. When the yeast plants began to feed on the sugar, this caused the formation of two things. One is carbon dioxide, a gas, and the other is alcohol. Write these on the board—carbon dioxide gas, car-bon di-ox-ide gas, and alcohol, al-co-hol. So it was the carbon dioxide gas given off by the yeast that forced the cork out of the test tube. Watch your test tube and shake it occasionally to see if the cork will pop out of it.

Do you want to try another experiment? This time we will try to discover what the yeast plant needs to make it grow. Will a boy and a girl please go to the table? (5 seconds) Will the girl please stand by the glass labeled No. 1 and will the boy please stand by the glass labeled No. 2? (5 seconds) Will the girl please listen carefully to directions? Fill the glass about half full of lukewarm water. (10 seconds) Put two teaspoonfuls of sugar into this glass of water. (10 seconds) Crumble the yeast into this. (10 seconds) Stir this thoroly.—Have you stirred this thoroly? Take the spoon out of the glass. Now watch your glass carefully to see if any bubbles are forming. While the girl is watching her glass, will the boy please follow these directions? Fill the glass about half full of lukewarm water. (10 seconds) Crumble the yeast into this. (10 seconds) Stir thoroly and then take the spoon out. Watch your glass to see if you can see any bubbles. If you both stoop down so that your eye is on a level with the glass, you can see better. You will want to make an accurate report when I ask you for it. Will the boy smell the liquid in both glasses? (2 seconds) Which smells the stronger? (3 seconds) Yes, the girl's glass smells stronger, which shows that the yeast plants in it are budding rapidly. This odor is alcohol.

Will the girl please tell the class if there are any small bubbles in her glass? (2 seconds) Yes, there are many little bubbles. Show these to Group No. 1, so will Group No. 1 please come to the table to see these little bubbles? (20 seconds) Do you see them? All right, Group No. 1 be seated. (10 seconds) Now will the boy please tell the children if there are any bubbles in his glass? (2 seconds) No, there are no bubbles, unless there are some left from stirring. You had no sugar in your glass, which proves that yeast plants need sugar to grow. These little bubbles that we see in the girl's glass are carbon dioxide bubbles. For you remember that when yeast grows it produces carbon dioxide and alcohol. Will the boy and girl please be seated? (5 seconds)

This experiment shows us what yeast needs for food. What is it? (5 seconds) Sugar. We used lukewarm water in both glasses. You will find another condition necessary to the growth of yeast if you try the following experiment tomorrow. You may now jot down what you will need. Into one glass put boiling water, yeast and sugar. Into another glass put ice water, yeast, and sugar. This will show you whether yeast will grow in extremely hot or extremely cold conditions.

Will someone please hold up the slice of bread so the class may see. Why is it full of holes? (5 seconds) These holes were made by carbon dioxide bubbles in the dough. When yeast is mixed with bread dough and kept in a warm place, the yeast begins to work and the carbon dioxide makes bubbles in the dough and causes it to swell or rise. The heat of the oven in baking the bread gets rid of the alcohol. And the heat of the oven kills the yeast plants, so there are no live yeast plants in this slice of bread.

Let us compare the yeast plant with other plants that we know. To do this we will need plenty of space on the blackboard for two columns. Write oak tree at the top of the column on the left, for we all know the oak tree—o-a-k tree. Write yeast, so that it will head the column on the right—y-e-a-s-t. Underline each of these.

First we will think of the size of the oak tree. It is so large we can easily see it, so below oak write "No. 1 easily seen." (5 seconds) Can you see yeast plants with the naked eye? (3 seconds) No you need a microscope to see them. Below yeast write "No. 1 microscopic"—mi-cro-scop-ic.

What about the color? We think of plants as being green in color, don't we, so below oak write "No. 2 green." (5 seconds) What color is the yeast plant? (5 seconds) It has no color, so in the yeast column write "No. 2 colorless"—col-or-less.

The oak and most of the other plants you know have flowers. So write in the oak column "No. 3 flowering." Does the yeast plant have flowers?—The yeast plant has no flowers, so in the yeast column write "No. 3 non-flowering"—non-flowering.

Let us think about how to grow a young oak tree. To do this we would plant a seed. The acorn is the seed of the oak tree. Therefore in the oak column write "No. 4 grows from seeds." (5 seconds) Look at the drawing on the board. How does the yeast plant grow another plant? (5 seconds) When the yeast grows, a little swelling or bud appears, and we call this process budding. In the yeast column write "No. 4 grows by budding." (5 seconds) You may add to these two columns if you think of other interesting differences.

Immediately following this radio lesson each group will want to examine the test tube and the two glasses on the table. And if you have a compound microscope, look at some growing yeast under it. A real thrill awaits you.

RADIO MUSIC

Lesson No. XIV "CHEROKEE CRADLE SONG" Fifth Grade

Good morning!

An old Indian once said, "There may be something wrong with the Indian drum dance, but I do not like the white man's fiddle dance."

If you have ever heard any Indian music you will recall the dull, monotonous tone of the tom-tom (play tom-tom), the sharp clicking of the rattles (play rattles), and the queer, ready tones of their hand-made flute (play oboe). The Indian loves music. He worships, plays games, works, fishes, and hunts to music. He likes to sing, too. He has his prayer songs for rain or for good crops, his songs of victory, songs of war, and even songs of love. Indian songs are usually very short, often built upon what is known as the old five-tone scale (sing do-re-mi-so-la).

Here is an old, old Indian tune of the Medicine Man. You will hear nothing but (mi-re-do-la-so):

Shall we send the Medicine Man and his song to you when you are sick?

There is a nice little Indian song in your books—page 83—(pause) "The Cherokee Cradle Song." Imagine if you can a little bright-eyed, wide-awake papoose trying to go to sleep at night when the owls all around him are hooting their weird songs.

(Radio reads the poem)

At the right of the title of the song (pause) you will see that this is a real Cherokee air or tune. I think you are going to find after studying it that it is made up of even fewer than five tones. I wonder if you can find how many? (play chord of A minor) This is (la) in the second space. Sing it! (pause) The first tone of the song is (mi). Sing it! (pause) The first three tones are (mi-la-do). You sing! (pause) How many times in the song can you find those weird, minor tones (mi-la-do)? (pause) Three times. Now, I am going to ask you to sing the song from the beginning with syllables. Be sure to give full time to half notes. (mi) Sing!

(Radio and children sing syllables without piano)

Sing again with syllables. If you can find any other tones than "mi-la-do" you may raise your hand. (mi) Sing!

(Radio and children sing again with syllables)

Did you find any other tone than "mi-la-do"? The high "mi" is still "mi" isn't it? Could you, like the Indian, make up a good song using only three tones? *You might try.*

Now, let's sing the words to the song. Remember every word has a lovely vowel tone which you must sustain. The vowels, and not the consonants, are the singing tones. In the second line of the music shall we say "thĕ owls" or "thē owls"? The word "owls" begins with a vowel tone, so we say "thē owls are tūning" and not "tooning." (mi) Sing!

(Radio and children sing words to first stanza)

I hope you are making the vowels sing nicely, particularly on the half notes. Listen while I sing the word "eyes." Notice that I am sounding "eye" two full counts before sounding the "s." (Radio sings "eyes.")

Now sing the whole song, taking care of the vowel tone on each of the half notes. Remember, too, it is a cradle song. (mi) Sing!

(Radio and children sing all of song—piano accompaniment)

We are told that the Indian mother has but very few cradle songs. Usually while rocking the little papoose to sleep she sings just anything she happens to know.

Would you say this little Cherokee Cradle Song is major or minor? (play A minor chord) Very decidedly minor.

At the top of the page it says "Melodies in the Harmonic Minor Scale." I wonder what that means? Lay your book down but do not close it. (pause) I am going to ask you to sing the minor scale. It starts rather low. (la) Sing!

(Radio and children sing minor scale ascending and decending)

That is called the normal minor scale. Will the teacher please write "normal minor"? Now if I should sing the minor scale with the seventh tone sharped (la-ti-do-re-mi-fa-si-la La-si-fa-mi-re-do-ti-la) we have what is called the harmonic minor scale. Please write. (pause) (la-si-la) is harmonic. (la-so-la) is normal. If you were to sing to me the tune of "The Cherokee Cradle Song" and then ask me whether it is normal minor or harmonic minor, I think I should say to you "let me play the piano accompaniment and then I will tell you." If I hear (la-si-la) then I will know it is harmonic minor. Let's listen to the accompaniment. If we hear (la-si-la) let's raise our hands.

(Piano plays accompaniment)

Did you hear towards the end (sing "la-si-la" with accompaniment)? Tho the little tune itself does not show harmonic minor, we do hear the harmonic minor in the accompaniment. (Chord of G minor) Let me play another song. I wonder if you can hear (la-si-la).

(Radio plays "How Should I Your True Love Know")

The first phrase (play phrase and sing syllables) decided that for us. The (la-si-la) makes it harmonic minor. The song I played is there in your book at the bottom of the page. (pause) It is as old as Shakespeare, and was probably used in his play called "Hamlet." Sing it with me. Be careful with the big skips on (hat and staff) (la) Sing!

(Radio and children sing. Between stanzas, while holding the last tone, say "How sorrowful"!!)

There you have two harmonic minor songs—one, oh, so sad, the other just mysteriously sleepy!

(Sing first or both stanzas of "Cherokee Cradle Song" and then

Mimeographed Direction Sheet to Classroom Teacher for Radio Music, Lesson XIV, "Cherokee Cradle Song"

Material needed: Progressive Book II.

Specific objective: To present the harmonic minor thru an interesting old Indian tune.

Directions to the teacher during the broadcast: Be ready to write "normal minor scale." Also, "harmonic minor scale."

Follow up:

(1) Review "Cherokee Cradle Song" and "How Should I Your True Love Know."

(2) Sing normal and harmonic minor scales. The latter is not easy to teach to children. A pause between "si" and "fa" may simplify the problem.

(3) Study one or all of the songs, pages 84-87. Tho all are minor, each has a different mood.

"The Little Tree"

(a) Established the minor key by singing "la-do-mi-do-la." Key of A minor. Pitch A, call it "la."

(b) This song will sing more easily with the words than with the syllables if the correct intervals are observed and the rhythm established thru scansion.

(c) Sing as the words suggest, first stanza slowly and sadly, second stanza more hopefully.

"In the Sleigh"—Swedish Folk Song

(a) Establish the minor tonality as in the song above. Key of G minor. Pitch G, call it "la." Sing "la-do-mi-do-la."

(b) Scan or clap the notes for rhythm.

(c) Sing, not sadly, but with brisk, joyful rhythm.

(d) The composer suggests a few marks of expression. Ask the class to use them. Are they suitable? The class may have other ideas as to the way the song should be sung.

"The Tambourines"

(a) Key of D minor. Pitch D, call it "la." Sing "la-do-mi-do-la."

(b) Work on "Tho' upon them" by syllable and words before trying the song. Observe the repetition of this tone group on "winter stealing" and "Come with threat of."

(c) The teacher may sing the first two phrases with the words. The class may then sing the whole song, the teacher helping when and if necessary.

(d) Sing happily and briskly. This is a lively dance which comes from the land of the troubadours in Southern France. It was written for the harpsichord, by a French composer, in 1737.

(e) D.C. (Da Capo) back to the beginning and sing to "Fine" (the end).

"Jack Frost"—Marshall Bartholomew, Director of the Yale Glee Club. To be sung rather slowly.

"The Old Shepherd"—Swiss Folk Song.

A beautiful old song which is intended to convey a lonesome, homesick feeling.

(4) Review "Homesick Lowlander," another Swiss song.

SHALL RADIO be incorporated as part of the school equipment? Its educating value has been eagerly recognized by the advertiser, and today, entirely apart from the school, the radio is an educational force influencing untold thousands.

School administrators, teachers, boards of education, state departments of education, and university bureaus recognizing the effectiveness of the radio to reach multitudes with the single voice, are experimenting and studying the best methods and the best equipment for using radio in the school. The rapid development of this instrument in the past few years promises a continued advance in the coming years.—Brownell, S. E., *Nation's Schools*, October, 1931, p. 53.

EDUCATIONAL BROADCASTING RESOURCES

TRACY F. TYLER

Secretary, National Committee on Education by Radio, Washington, D. C.

THERE ARE AVAILABLE today a number of attractive radio programs for school use. Some of these are sent out by "educational stations"[1] and others are sponsored by the nationwide broadcasting chains. Among the outstanding examples of programs for pupils, teachers, and parents are the following:

Ohio School of the Air—Under the direction of the state department of education the Ohio School of the Air has recently completed its fifth year. The 1933-34 schedule includes: WLW, 2 to 3 p.m., EST,[2] Monday to Friday, inclusive, and 5:30 to 5:45 p.m., EST, Saturday; and WOSU, 2 to 3 p.m., EST, Monday and Tuesday, and 2:45 to 3 p.m., EST, Wednesday. Altho intended primarily for school pupils, the Ohio School of the Air programs have proved of interest to adults as well.

The Ohio Emergency Junior Radio College—Under the direction of the state relief commission, the state department of education, and the Ohio State University, this project was carried on for the first time during 1933-34. Six subjects were given: French, English literature, political science, psychology, Spanish, and European history. The broadcasts which were given by WOSU were on the following schedule: 9:30 to 10 a.m., and 10:30 to 10:55 a.m., EST, Monday to Friday, inclusive; 1:15 to 1:45 p.m., Monday to Thursday, inclusive; 2:30 to 2:55 p.m., Wednesday and Thursday.

North Carolina Radio School—Under the direction of the state department of public instruction this work is now in its third year. It is broadcast from station WPTF from Monday to Thursday inclusive between 11:30 a.m. and 12 o'clock noon, EST. It is intended primarily for school pupils.

Wisconsin College of the Air—This program is broadcast from Monday to Friday inclusive, 1 to 1:30 p.m., CST, over publicly owned stations WHA, Madison, and WLBL, Stevens Point. This project is particularly designed to extend educational opportunities to the thousands of boys and girls between the ages of 14 and 20 in farm and city homes who might otherwise be unable to receive any further training.

Wisconsin School of the Air—This project, presented by the two state-owned stations, WHA, Madison, and WLBL, Stevens Point, has the approval of both the state department of public instruction and the Wisconsin Teachers Association. The schedule calls for both morning and afternoon programs from Monday to Friday inclusive. The morning programs are from 9:35 to 9:50 a.m., CST, while those of the afternoon are from 2:05 to 2:20 p.m., CST.

The Standard School Broadcast—This broadcast is sent out by NBC, KGO, Pacific coast network on Thursdays from 11 to 11:45 a.m., PST. It is intended for classroom use in the schools.

Chicago Public Schools Broadcast—It is prepared under the direction of the Chicago public schools and broadcast from WMAQ Monday to Thursday inclusive, 11:15 to 11:30 a.m., CST. The program is prepared especially for use of school pupils in classrooms.

[1] The term "educational station" is used to designate radio broadcasting stations which are sponsored by universities, colleges, and other governmental agencies and are not operated primarily for financial gain.

[2] Abbreviations: EST, Eastern Standard Time; CST, Central Standard Time, MST, Mountain Standard Time; and PST, Pacific Standard Time.

University of Illinois radio programs—Many of the programs of Station WILL consist of French lessons, classroom lectures, debates, plays, and music—all particularly designed for school use.

State University of Iowa radio programs—History, music, economics, and literature are among the programs especially planned for school use being broadcast by WSUI.

University of Utah Field Course in Classroom Organization and Management—The course is given by L. John Nuttall, superintendent of schools, Salt Lake City, and is broadcast each Thursday from 10 to 10:30 p.m., MST, by KSL, Salt Lake City. The course is supplemented by assignments, outlines, and tests, and upon its satisfactory completion regular university credit is awarded.

Rural Education and Rural Life Radio Series of the New York State Education Department—This series which is now in its third year, is given each Tuesday between 12:45 and 12:55 p.m., EST, over station WGY, Schenectady. The talks are intended to give rural groups explanations and descriptions of the many services available thru the various bureaus and divisions of the state education department.

Educational Pageant of the Air—A series of radio programs sponsored by the Tennessee Educational Commission, broadcast over WSM, Nashville from 6 to 6:15 p.m., CST, each Thursday and from WLAC, Nashville, from 5 to 5:15 p.m., CST, each Monday. These dramas are intended to give the radio listeners some pertinent facts about the educational history of Tennessee.

The Citizen and His School—A series sponsored by the Oregon State Department of Education and broadcast over KOAC, Corvallis, from 7:30 to 8 p.m., PST, each Tuesday. The series is intended to convey to the citizens of the state a greater knowledge of the public schools, their methods of organization, and their problems.

University of Kentucky radio programs—These programs are given over WHAS, Louisville, Monday to Friday inclusive, 12:45 to 1:30 p.m., CST. The hour from 1:15 to 1:30 each day is devoted to material which is suitable in supplementing classroom work.

University of California radio service—A program is given over stations KPO, San Francisco, KECA, Los Angeles, and KFSD, San Diego, from 1:30 to 10 p.m., PST, each Sunday. Another program from the same stations is given from 3:45 to 4 p.m., PST, on Monday to Friday inclusive. A third series is given over stations KGO, San Francisco, KFI, Los Angeles, and KFSD, San Diego, at 12:15 to 12:30 p.m., PST, on Tuesdays and Thursdays. The fourth series is given over stations KXO, El Centro, KFKB, Sacramento, KFI, Los Angeles, and KGB, Sacramento, from 12 to 12:15 p.m., PST, Monday to Friday inclusive.

University of Michigan broadcasting service—The programs of the University of Michigan are broadcast over WJR, Detroit, Sunday at 2:30 p.m., EST, Monday and Tuesday at 9:15 a.m. and 2 p.m., EST, Wednesday and Friday at 2 p.m., EST, and Thursday at 2 p.m. and 10 p.m., EST. The programs are all designed for use in connection with classroom work.

Damrosch Music Appreciation Hour—This program is given over the combined red and blue networks of the National Broadcasting Company on Friday from 11 to 12 noon, EST.

American School of the Air—The program is given over the national network of the Columbia Broadcasting System from 2:30 to 3 p.m., EST, Monday to Friday inclusive.

On November 29, 1933, a questionnaire was sent to 38 educational stations asking for information as to their power, frequency, sponsorship, and hours of broadcasting. Table 1 summarizes the replies on the first three items while Table 2 gives the hours of broadcasting on school days. Principals will understand, of course, that all of the hours shown in Table 2 are not given to programs suitable for classroom use. It may be found, too, that the hours of certain stations have changed somewhat since the first of the year.

TABLE 1—Educational Radio Broadcasting Stations of the United States—February 1934 [1]

Number	State	City	Call letters	Owner	Frequency	Power in watts [2]
1	Connecticut	Storrs	WCAC	Connecticut State College	600	250
2	Florida	Gainesville	WRUF [3]	University of Florida	830	5000
3	Georgia	Atlanta	WGST [3]	Georgia School of Technology	890	500–250
4	Georgia	Oglethorpe University	WJTL [3]	Oglethorpe University	1370	100
5	Illinois	Urbana	WILL	University of Illinois	890	1000–250
6	Indiana	Lafayette	WBAA	Purdue University	1400	500
7	Iowa	Ames	WOI	Iowa State College	640	5000
8	Iowa	Iowa City	WSUI	State University of Iowa	880	500
9	Kansas	Lawrence	KFKU	University of Kansas	1220	500
10	Kansas	Manhattan	KSAC	Kansas State College	580	1000–500
11	Michigan	Lansing	WKAR	Michigan State College	1040	1000
12	Minnesota	Minneapolis	WLB	University of Minnesota	1250	1000
13	Minnesota	Northfield	WCAL	Saint Olaf College	1250	1000
14	Missouri	Saint Louis	WEW	Saint Louis University	760	1000
15	New York	Buffalo	WSVS	Seneca Vocational High School	1370	50
16	New York	Canton	WCAD	Saint Lawrence University	1220	500
17	New York	New York	WNYC	City of New York	810	500
18	New York	Troy	WHAZ [3]	Renesselaer Polytechnic Institute	1300	500
19	Ohio	Columbus	WOSU	Ohio State University	570	1000–750
20	Oklahoma	Norman	WNAD	University of Oklahoma	1010	500
21	Oregon	Corvallis	KOAC	Oregon State System of Higher Education	550	1000
22	Oregon	Portland	KBFS	Benson Polytechnic School	1420	100
23	Pennsylvania	Grove City	WSAJ	Grove City College	1310	100
24	Pennsylvania	Harrisburg	WBAK	Pennsylvania State Police	1430	1000–500
25	South Dakota	Brookings	KFDY	South Dakota State College	550	1000
26	South Dakota	Rapid City	WCAT	South Dakota State School of Mines	1200	100
27	South Dakota	Vermilion	KUSD	University of South Dakota	890	500
28	Texas	College Station	WTAW	A & M College of Texas	1120	500
29	Washington	Pullman	KWSC	State College of Washington	1220	2000–1000
30	Wisconsin	Madison	WHA	University of Wisconsin	940	2500
31	Wisconsin	Stevens Point	WLBL	Wisconsin Department of Agriculture and Markets	900	2500

[1] A few stations were omitted from the table because they failed to furnish the information requested in the inquiry blank sent to each educational station.

[2] Where two figures for power are given, the former is the daytime and the latter the nighttime power.

[3] Sells time for advertising purposes.

TABLE 2—Educational Radio Broadcasting Stations of the United States—February 1934 [1]

Identification number [2]	Hours of operation [3]					Total number of hours on school days
	Monday	Tuesday	Wednesday	Thursday	Friday	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 E [4]	12:30-1p	12:30-1p	12:30-1p 4:30-5p	12:30-1p	12:30-1p	3
2 E	8a-7p	8a-7p	8a-7p	8a-7p	8a-7p	55
3 C	7a-12m	7a-12m	7a-12m	7a-12m	7a-12m	85
4 C	6:45a-12m	6:45a-12m	6:45a-12m	6:45a-12m	6:45a-12m	86¼
5 C	8-9a 10a-12n 5-6p	8-9a 10a-12n 5-6p	8-9a 10a-12n 5-6p	8-9a 10a-12m 5-6p	8-9a 10a-12n 5-6p 11p-12m	21
6 C	7-8p				7-8p	2
7 C	6:45a-2p 3:30-4p	6:45-11a 11:45a-2p 3:30-4:45p	6:45-11:30a' 12n-4:45p	6:45-11a 12n-2p 3:30-4:30p	6:45-11:30a 12n-2p 3:30-4:15p	39¾
8 C	9-10a 11a-12:30p 2-4p 6-10p	12m-2a 9-10a 11a-12:30p 2-4p 6-10p	9-10a 11a-12:30p 2-4p 6-10p	9-10a 11a-12:30p 2-4p 6-10p	9-10a 11a-12:30p 2-4p 6-10p	44½
9 C	2:30-3:30p 6-6:15p	2:30-3p 6-6:15p	2:30-3p 6-6:30p	2:30-3p 6-6:15p	2:30-3p 6-6:30p	4¼
10 C	8-9a 10-10:30a 12:30-1:30p 4:30-5:30p	8-9a 10-10:30a 12:30-1:30p 4:30-5:30p	8-9a 10-10:30a 12:30-1:30p 4:30-5:30p	8-9a 10-10:30a 12:30-1:30p 4:30-5:30p	8-9a 10-10:30a 12:30-1:30p 4:30-5:30p	17½
11 E	12n-12:30p 1:45-3p	12n-12:30p 2-3p	12n-12:30p 2-3p	12n-12:30p 2-3p	12n-12:30p 2-3p	7¾
12 C	1-1:30p	7-8p	1-1:30p	10:45a-12:30p 7-8p	1-1:30p 4-5p 7-8p	7¼
13 C	9:45-10:15a 7-8p	9:45-10:15a	9:45-10:45a 7-8p	9:45-10:15a	9:45-10:15a	5
14 C	8a-1p 2-4:45p	8a-1p 2-4:45p	8a-1p 2-4:45p	8a-1p 2-4:45p	8a-1p 2-4:45p	38¾
15 E	8:30-10a 2-3p	8:30-10a 2-3p	8:30-10a 2-3p	8:30-10a 2-3p	8:30-10a 2-3p	17½
16 E	12:30-1:30p	12:30-1:30p	12:30-1:30p 3-4p	12:30-1:30p 3-4p	12:30-1:30p 3-4p	8
17 E	9a-5:30p	9a-5:30p	9a-5:30p	9a-5:30p	9a-5:30p	42½
18 E	6p-12m					6
19 E	9-11a 1-3p 8-10p	9-11a 1-3p	9-11a 1-3p 8-11:30p	9-11a 1-3p	9-11a 7-11:30p	28
20 C	3:30-5p	7:15-9:15p	3:30-5p 8:15-9:15p	7:15-9:15p		8
21 P	7:30a-4:30p 6:30-9:30p	7:30a-4:30p 6:30-9:30p	7:30a-4:30p 6:30-9:30p	7:30a-5:30p 9:30-8:30p	7:30a-4:30p 6:30-9:30p	60
22 P	11a-12:30p 3-5p	11a-12:30p *3-5p 7:15-8p	11a-12:30p 3-5p	11a-12:30p 3-5p 7:15-8:15p	11a-12:30p 3-5p	17½ 1¾
23 E						
24 E	10:30-11:30a 1:30-2:30p 4-4:30p	10:30-11:30a 1:30-2:30p 4-4:30p	10:30-11:15a 1:30-2:30p 4-4:30p	10:30-11:30a 1:30-2:30p 4-4:30p	10:30-11:30a 1:30-2:30p 4-4:30p	12¼
25 C	12:30-2p	12:30-2p	12:30-2p	12:30-2p	12:30-2p	7½
26 M	12:30-1:30p	12:30-1:30p	12:30-1:30p	12:30-1:30p	12:30-1:30p	5
27 C	4-5p 9-10p	4-5p	4-5p 9-10p	4-5p	4-5p 9-10p	8
28 C	12:30-1:30p 8-9p	8-9p		12:30-1p 8-9p	12:30-1p	5
29 P	6:45-8a 10:30a-9:30p	6:45-8a 10:30a-9:30p	6:45-8a 10:30a-9:3 p	6:45-8a 10:30a-7:30p	6:45-8a 10:30a-9:30p	59¼
30 C	8a-4:30p	8a-4:30p	9a-4:30p	8a-4:30p	8a-4:30p	42½
31 C	8a-3p	8a-3p	8a-3p	8a-4p	8a-3p	36

[1] A few stations were omitted from the table because they failed to furnish the information requested in the inquiry blank sent to each educational station.

[2] See Table 1, column 1.

[3] In columns 2, 3, 4, 5, and 6, a. m. is indicated by the letter a after the hour; p. m. by p. 12 o'clock midnight by m, and 12 o'clock noon by n. Some of the stations broadcast on Saturday and Sunday.

[4] E—Eastern Standard Time, C—Central Standard Time, M—Standard Mountain Time, and P—Standard Pacific Time.

SUITABLE RADIO PROGRAMS FOR SCHOOLS

F. H. LUMLEY
Bureau of Educational Research, Ohio State University, Columbus, Ohio

IN ORDER TO GAIN a general impression concerning the types of programs considered suitable for schools, an analysis was made of the latest available program listings of eight broadcasting agencies.[1] The subjectmatter of and the time devoted to seventy-five different school broadcasts are summarized in Table 1.

TABLE 1—ANALYSIS OF SCHOOL PROGRAMS BROADCAST BY EIGHT AGENCIES

Subjectmatter	Number of broadcasts per week	Number of minutes per week
Science (botany, nature, physics, health)	12	113
Music	10	200
History	9	120
Geography	8	188
Literature	7	135
Stories	7	73
Current events	4	64
Art	4	38
Guidance	4	28
Civics	3	38
Economics (industry, transportation)	3	34
Arithmetic	2	34
Games and rhythmics	2	30

Usually the broadcasts were given by one person and were in the form of a talk. Merely to indicate the different methods of presentation, the broadcasts were classified under four types: (a) dramatizations (plays, dialogs, interviews), (b) narratives or stories, (c) musical, and (d) talks (lessons, reports). There were 13 dramatizations, 10 narratives, 10 musical programs, and 40 talks. Two programs consisted of readings. The American School of the Air gave the most dramatizations. Naturally the method of presentation is really determined by the personality and ability of the speaker; the outward form—dialog, dramatization, or talk—is only a means of helping the speaker or speakers to find the most natural medium.

[1] During 1932-33 the Ohio School of the Air (WLW-WOSU) broadcast 5 hours of programs a week. The Wisconsin School of the Air (WHA) broadcast 2½ hours a week. Other programs directly intended for schools were broadcast by the North Carolina School of the Air (WPTF) 2 hours a week; Chicago public school system (WMAQ) 2½ hours a week; Cleveland public school system (WTAM) 1 hour a week; California Standard School Programs (KGO) 45 minutes a week; Damrosch program along with Magic Speech broadcast and Radio Guild (NBC) 2½ hours a week; American School of the Air (CBS) 2½ hours a week. There were other programs, but mention of these is sufficient to show that in certain parts of the United States a variety of specially prepared school programs was available.

DEFECTS OF PRESENT PROGRAMS

Some of these programs now broadcast are unusually well suited to school use; many could be improved; a few are thoroly poor. What are the reasons why existing programs do not altogether satisfy school needs? These reasons are:

(1) The program does not contain enough material of educational value to justify listening.
(2) The program cannot be related to the school plan of study.
(3) The program is over the heads of the pupils; it is too stuffed with facts.
(4) The program is uninteresting to the pupils.
(5) There is no provision for pupil activity.

We must not conclude from the foregoing criticisms that all programs without " pupil activity " are unsuitable for school use. However, when programs suffer from two or more of the above defects, they cannot be advantageously listened to during the school period. It will be worthwhile to illustrate these deficiencies by reference to types of programs which have been on the air or are now being broadcast.

Lack of educational value—In endeavoring to stimulate the pupil's interest and make the program easy to understand, the amount of valuable information in the program may be reduced too much by the introduction of extraneous details. This weakness is particularly likely to appear in the production of " historical dramalogs." It takes so long to lay the scene and develop the dramatic interest that very little time is left for the events of historical importance. Often authors are unfamiliar with the daily life of the times they dramatize. Therefore the conversations and minor events of the dramatization may not even have the value of helping the pupil appreciate the ordinary life of the times when the historical event was taking place. The same difficulty may occur when visits to industries or tours of the country are put in dialog or play form. Too much time is consumed in transporting the " visitors " and not enough in describing the individual items which they see. Before having the pupils listen to dramalogs and dialogs, the wise teacher will listen in himself to determine whether the radio dramatist knows the value of his material for educational purposes as well as in the development of dramatic situations.

Program unrelated to school plan of study—Ordinary radio programs are not expected to fit into the school curriculum. School broadcasts are. This fact is one of the reasons why radio programs are especially prepared and broadcast for schools. Since the school systems in any area do not have a common curriculum and since some

broadcasts deal with vocational guidance, current events, and other topics somewhat outside the standard study plan, there will never be a complete agreement between a series of school broadcasts and the classroom course of study. Within these limits, however, the broadcaster should attempt to determine what study sequence the majority of schools are following and adapt his radio series to this sequence. Other schools should then adapt their study courses to the radio series.

In geography the need for this can be fully appreciated. A class is studying the geography of Japan—the broadcast offered is on South America. When this class reaches South America, the radio program is on Japan. It is evident that it would be exceptionally hard to relate the classroom study to the radio study in such a case. It would be hard to have the class carry out a project on Japan because the supplementary help and stimulation from the radio comes so much later. Experienced teachers do not attempt to use such programs in their classes unless the program is of unusual importance—a program which justifies preparation for it as a unit in itself.

Table 2 illustrates how disparate may be the school courses of study and the radio course of study for a statewide broadcasting system. The data were obtained from teachers who were asked whether the subjectmatter of a given geography radio talk had been taken up in the regular classroom work (a) several weeks before hearing the talk, (b) a week or so before hearing the talk, or (c) at the time of hearing the talk. A number reported that the material had not been taken up in class. These teachers had about 1500 pupils under their charge.

TABLE 2—PERCENT OF PUPILS RECEIVING CLASS INSTRUCTION IN GEOGRAPHY BEFORE, DURING, AND AFTER HEARING RADIO TALKS ON THE SAME SUBJECT

Time at which subjectmatter was taken up in class	Radio talks between January 21 and April 14				
	1	2	3	4	5
Several weeks before broadcast	55%	51%	68%	24%	20%
A week before broadcast	3	17	9	13	5
At same time as broadcast	8	4	12	16	47
Not taken up or taken up at later date	34	28	11	47	28

It is evident from Table 2 that only for the last talk on April 14 did the radio lesson and the class lesson coincide to any great extent. How may this difficulty be overcome? In the first place the broadcaster should make a careful survey of schools using the broadcasts to find out when these schools study the different countries in their geography courses or whether the courses are organized by products, transportation, and similar topics. The different sequences should be

examined by an authority on geography to determine which sequence fits a large number of schools and is at the same time a desirable sequence. Then the broadcaster should mold his geography series around this sequence and should recommend its adoption in other schools not following it at present. Perhaps an approved textbook will follow the same general sequence and may be recommended to the listening schools.

The "hard to understand" program—When talks, dialogs, and plays are "over the heads" of the pupils, the teacher should make no attempt to have them listen further. In the program outlines sent out by broadcasting stations, the grades for which the program is suitable should be carefully determined by experienced teachers. Chicago and Cleveland programs are probably the most exactly indicated programs. In each case the programs are put on by the school system itself. It is also the duty of the classroom teacher to observe these grade indications. The 1933 annual report for the Ohio School of the Air showed that certain programs were being listened to by pupils in all twelve grades!

If a program is too difficult, the broadcaster should improve it in the following ways. First, he should eliminate difficult words.[2] Second, he should correct his sentence structure so that the thought is expressed directly. Third, he should revise his explanations and illustrations and attempt to put them in narrative form. Finally, he should (probably) delete half of the facts or ideas he is trying to put across and concentrate on enabling the pupil to thoroly understand the remaining ones. We know that pupils have a limited memory span for what they see and what they hear. They can absorb just so many facts or ideas; further facts or ideas are not remembered, sometimes not even grasped. In order to illustrate how some radio talks are poorly stated, an excerpt is cited as follows:

> The early pioneers found themselves in a very destitute condition, which was due to the fact that, in spite of all the efforts of those farming the land, the harvests of the preceding summer had been pillaged by a pest of black-winged marauders. Therefore, a great council, at which all the important settlers in Cuyahoga were present, was held in the newly built fort on the Chagrin River at the beginning of the winter months.

This illustration from a radio talk is far from being an unusual example. It should be heard rather than read to appreciate its faults. There are several words which might be meaningless for the listeners—destitute, pillaged, marauders. The phrase "black-winged ma-

[2] The importance of proper choice of words is shown in the following two studies: (a) Dale, Edgar. "Preparing Radio Talks for Children." *Education on the Air, 1932.* Columbus: The Ohio State University Press, 1932. p. 105-118; and (b) Lumley, F. H. "An Evaluation of Fifteen Radio Talks in Psychology by Means of Listener's Reports." *Psychological Bulletin* 29: 753-64; December, 1932.

rauders" may be poetic, but is not clear. If it is to be used, it should be preceded by the name of the bird, or the word "bird" itself. The sentence structure is unnecessarily involved. The meaning is not conveyed in clear concise sentences which stand out by themselves. Furthermore, the passive tense is used too frequently. Why use "found themselves," "had been pillaged by," and "was held"? Are the place names needed? A few place names in a talk add to its attractiveness. If many are used the listener becomes confused. His effort to remember the name or its effect upon his attention prevents him from properly understanding what follows. Revised, the two sentences might read as follows:

The pioneers living in the Cuyahoga region were poor. For the coming winter they had hardly enough to eat. Their grain was almost gone. In former years the grain harvest had been good. This year birds had come down on the fields and eaten much of the crop. Toward the end of the summer and at the harvest time the fields were thick with these black winged marauders, and it was impossible to frighten them away. So, with little grain for their meal, these pioneers faced a hungry winter. What to do? This was the question in the minds of the chief men of the Cuyahoga region when they met in council to talk over the situation. No more important meeting was ever held in the newly built river fort.

This revision is twice as long as the original two sentences, but this is no defect. Many radio talks could well dispense with half of their content and use the surplus time in amplifying and clarifying the remainder. Notice how the sentence structure has been changed in the revision. There are now several short sentences which convey vivid single pictures, each reinforcing the other. However, not all the sentences are short, because there must be sufficient variety. For this reason a question has been included. Difficult words have been eliminated and in their place strong simple words have been substituted. Where uncommon words have been used, the meaning has been made clear by the context, *e. g.*, "marauders." The one place name is sufficient to give the listener a sense of location. He would scarcely remember whether the district was Cuyahoga and the river Chagrin, or vice versa. The single name is repeated twice because this impresses it upon the listener and furthermore it is an interesting name and adds to the talk.

Uninteresting programs—Many radio programs, which appear to be satisfactory in plan, are uninteresting to pupils when listened to in the classroom. Programs which have little variety are commonly judged uninteresting. To expect the listening pupils to continuously repeat French phrases makes a French lesson tedious. On some days the pupils should repeat no phrases, but should hear a short easy play.

Some programs are not only uninteresting but are actively disliked by pupils. This dislike often appears when the play or the

dialog parts are taken by children or adults who speak in a stilted or unnatural fashion. Very often children are taught to speak unnaturally over the microphone in the belief that expressiveness is added to what they say. It may possibly increase expressiveness, but it destroys the sympathy of the listening pupils for the children taking part. Many straight lectures are uninteresting unless the content is of unusual importance.

What types of programs then are attractive to children? In the spring of 1933, a study of children's preferences was made jointly by the Ohio School of the Air and the Bureau of Educational Research at Ohio State University.[3] Children in the fourth thru eighth grades were shown a list of suggested programs and asked to choose the one they would most like to hear and the one they would least like to hear. Combined rankings showed that the suggested programs appealed to the children in the following order:

(1) Plays telling the stories of books read by children
(2) Dramalogs about the lives of great explorers, inventors, etc.
(3) International programs coming from foreign countries
(4) Historical events told as if by eye witnesses
(5) Talks by famous men and women
(6) Musical programs with songs to be sung by the listener
(7) Travels of a boy and girl around the world.

As presented to the children, these program suggestions were not stated exactly in this brief form, but were amplified somewhat. The appeal of the dramatic type of program is quite evident from the above preferences.

Pupil activity—It is generally believed that a greater and more lasting impression is secured if the pupil experiences the subject-matter thru several senses. Thus if he sees, hears, and feels an object, he remembers it better than if he only hears it. Going upon this assumption, radio broadcasters have endeavored to introduce "pupil activity" into their radio programs. In foreign language lessons, such activity consists in pronouncing the words after the speaker, writing from dictation, and answering questions. In geography, the pupil may follow on a map the journey taken by some explorer, or write down the products peculiar to different parts of a country. The commonest form of pupil activity is simply to take notes on the broadcast. There is at the present time a difference of opinion concerning the value of taking notes, reading texts while listening to foreign language broadcasts, and answering questions asked over the radio. The most common difficulty is that pupils may lose the sequence

[3] Lumley, F. H. *Children's Preferences for Children's Programs.* Bulletin No. 6. Columbus, Ohio: Radio Division, Bureau of Educational Research, Ohio State University, 1933. 20 p. (mimeo.)

of the thought in the broadcast in carrying out the activity. Thus if the broadcaster does not properly time the pause allowed for pupil participation, he may begin again before the pupils have finished repeating the words or answering the question. Furthermore, the teacher should be allowed an opportunity to make corrections which are necessary for the pupils in his own individual classroom. For these reasons, the "activity" broadcaster must time himself very carefully with an ordinary class, either while the broadcast is proceeding or at a rehearsal.

Some teachers, in asking questions, try to anticipate the mistakes which the pupils will make. In conducting "Story Plays and Rhythmics," the broadcasting teacher has the pupils go thru a number of different movements. It is easy to foresee that when the pupils are asked to scatter out inside a circle, some will be near together. Therefore the observation, "No boys, some of you are too close together—scatter out more" may seem very pertinent to the pupils in a number of listening and participating classes. Similarly, the radio singing teacher may know that the pupils are apt to flat on certain notes. She can tell them that they have flatted, altho of course she has not heard the actual notes just sung. Quite commonly pupils are asked to repeat an answer more loudly, the broadcasting teacher judging that the first participation on the part of the pupils was weak. If not overdone, or if not incongruous, these anticipations of pupil errors established a closer relation between the broadcasting teacher and the pupils. But beware of saying, "No, twelve is wrong, seven is the right answer," when no one in the class said twelve. In general, it is best for the classroom teacher to correct her pupils, and for the broadcasting teacher to allow time for this correction.

DIFFERENT METHODS OF PRESENTATION OF SCHOOL BROADCASTS

A given school program may be presented as a straight lesson by the broadcasting teacher, as a talk or report, as a recitation, as a dialog, interview, or conversation, and finally in play or dramatic form. In addition, music may be used with the program or music may be the subject of a special program.

Straight radio lessons—The straight lesson is of greatest usefulness when the broadcasting teacher is unusually talented and the lesson is intended to serve as a demonstration to the classroom teacher of good teaching methods. Otherwise such lessons are too little varied from the classroom procedure, and suffer many drawbacks in being given over the radio. For the most successful use of radio in

the school, the classroom teacher should never feel that he is turning the control of his pupils over to the broadcaster. He must never feel that he has no function during the broadcast. Rather, he must feel that the radio period is similar to a laboratory session, a museum visit, an illustrated book, or a motion picture showing. It is a demonstration which the classroom teacher must explain to the pupils and for which he must prepare them. Other methods of presentation are therefore considered in this light.

Radio talks—Many radio talks as now given are equivalent to a similar amount of printed material. As such, they have no right to be broadcast unless the speaker is an exceptionally gifted reader, and his pronunciation, intonation, phrasing, and other speech characteristics make the subject clearer and more interesting than it would otherwise be. The ordinary radio talk may not justify the effort of tuning in and listening. As experiments have shown, the average pupil and superior pupil will gain more of certain kinds of information by reading.[4]

Breaking into the monotony of the school day is not sufficient excuse unless the talk is inspirational as well as informational. Perhaps the ideal radio talk is in narrative or story form. The traveler who tells of his experience in the arctic circle may give such a talk. It can even be done for visits to factories and industries. In some cases these talks are broadcast as eye witness accounts. The broadcaster suggests to the pupils that he and they are in a factory. He deftly pictures the surroundings and, having set the scene, describes the manufacturing processes which are being carried on. Occasionally he introduces little incidents of human interest. These enliven the talk and permit the listeners to relax.

Recitations or readings—Readings are most suitable for English broadcasts, altho characteristic presentations can be introduced into history and geography courses. The recitation or reading should be brief; it must be read so that the dramatic quality is enhanced. Preferably, it should be only a part of a program. A whole program of reading or recitations, with their dramatic quality, would become monotonous. Sometimes authors or poets are asked to read their own works over the radio. The interest which pupils have in hearing the person who wrote the work read it will not last beyond the first selection, unless the author is a good reader as well as writer.

Dialogs, interviews, and conversations—If these are carried out with naturalness, they are one of the best means of presentation.

[4] Lumley, F. H. "Research in Radio Education at Ohio State University." *Education on the Air, 1933.* Columbus, Ohio: Ohio State University Press, 1933. p. 348-71.

The change of voices and the short sentences and interjections banish monotony. If the conversation does not sound natural, then the effect is completely lost and the presentation is apt to be worse than an ordinary talk. Broadcasters of dialogs should rehearse with care—not only that they may know the lines of their script, but that they may feel at ease before a microphone. Outlines or complete scripts of the dialog should be carefully prepared and timed so that spontaneity of expression and thought will not drive out the intended subjectmatter and dissipate the educational usefulness of the program. The 1933 volume of *Education on the Air* contains a description of the methods used in the University of Chicago Round Table.[5] This radio round table is characterized by its naturalness and spontaneity.

A broadcast method developed in Germany in connection with the teaching of foreign languages is of interest here. Realizing that an effective broadcast needs the cooperation of an expert in the subject and an expert in methods of teaching, Friebel based his radio English and French lessons on this principle and broadcast them from stations in Germany.[6] The broadcasts consisted of a dialog carried on between a Frenchman (the subject expert) and a German (the broadcast teacher). It was the duty of the Frenchman to give perfect pronunciation and intonation and represent the traits and points of view of his country. It was the task of the broadcast teacher (the German) to elicit from the Frenchman phrases and expressions which would help the listeners most and to interpret the Frenchman's traits and points of view to them. If an unbecoming analogy may be drawn, the Frenchman was the elephant in the zoo and the German (the teacher) was the guide. Knowing the mental background of the listener and methods of appealing to him, the broadcast teacher could render tremendously effective the peculiar abilities and characteristics possessed by the Frenchman.

The same method can, of course, be used in other subjects. In the "interview," an authority on vocational guidance may be questioned. The questioner, a high-school pupil, represents the listeners, and the authority is thereby constrained to talk to a particular person and make his remarks in a practical and understandable way. Beware, however, of permitting the high-school pupil to be merely a foil to bring out what the person interviewed wishes to say. The palpable falseness of the high-school questioner will then alienate the listeners.

[5] Miller, Allen. "The Round Table." *Education on the Air, 1933.* Columbus: Ohio State University Press, 1933. p. 98-100.
[6] Friebel, Karl. *Rundfunk-Sprachunterricht.* Langensalza: Verlag von Julius Beltz, 1928. 48 p.

Dramatizations and plays—Most radio dramatizations suffer from too many characters and too much emphasis on setting. More than three characters are apt to confuse the listener. His own imagination should furnish the setting. It is up to the dramatization to develop the essential facts and impressions which are important to the pupil and to the course of study. It is obvious that it takes a great deal of dramatization to tell a very little bit. Therefore that "little bit" should be well chosen and the dramatization should be so constructed that the pupil is left with a very clear comprehension of why the event was dramatized and just what the event meant. The dramatization is primarily important because it makes dead events and far removed events seem alive and near. In geography broadcasts, the essential facts about a country may be best brought out in a talk (travel talk) or dialog. But an impression of the living country can be best gained by hearing its natives talking their language and by hearing the sounds which are characteristic of its streets, homes, and countryside. The dramatization may produce a profound impression and it may leave the pupil with little information. The classroom teacher must assure himself that the "profound impression" is a worthwhile impression and that the broadcast does not leave the pupil with either a changed attitude or an increased fund of information. The dramatic broadcaster must consult the teachers to learn how his programs are affecting the pupils.

Radio plays may have in themselves literary merit. In such cases, the form becomes more important than the content. Vocabulary limitations give way to style.

Musical programs—Music is taught in special programs, and it is also used to enhance others. The way in which music is presented depends upon the purpose which the broadcaster has in mind. He may wish children to know about music or he may wish children to like and appreciate music. For younger children it would seem that the best way to teach "music appreciation" is to relate the music to stories or to movements (dances, pantomimes) which the children can carry out. Children may sing also, either songs or the theme parts of orchestral selections. If it is not desirable from an educational standpoint to make children think of all music as "program" music, then probably the teaching of music (especially orchestral selections) should be left to later years.

Musical interludes are of great value in permitting relaxation. However, the music should be carefully chosen to have relation to the broadcast program. Songs have been very successfully used in connection with French language programs broadcast in England.

The children in the classes sing these songs in between parts of the lesson. Several years ago these French lessons contained no dialog and no songs. Now they contain a dialog or conversation period and two short periods of singing. Since the British Broadcasting Corporation has endeavored to obtain regular reports from teachers with regard to the use of the lessons, the changes may be regarded as very significant. The French lesson (suitable for second-year pupils) now consists of 5 minutes oral practise, 10 minutes *lecture expliquée,* or a similar form of practise in comprehension, 3 minutes singing, 5 minutes dialog or a reading of simple French poetry, and 2 minutes singing. From the British experience, it may be assumed that programs introducing short topics bearing on the same subject are to be preferred (in language, at least) to a full 25 minute program of one type.

Unfortunately it is not possible to reprint here examples of the different types of programs in order to show the details of the methods. However, anyone preparing broadcasts for schools should listen in to the different broadcasts now offered and secure the scripts for those not within listening distance. From examination of these broadcasts and scripts and observation of the pupils in the classroom, much more can be learned than from a set of condensed generalizations such as are contained in this article.

SUMMARY

To improve school programs at the present time, broadcasters need to (a) examine the subjectmatter content of the broadcasts more carefully from an educational standpoint, (b) relate the broadcasts to the school plan of study, (c) bring the programs within the comprehension of the pupils for whom they are intended, (d) make the programs more interesting to the pupils, and (e) provide for a certain amount of pupil activity, either during the broadcast or immediately afterward.

THE SELECTED REFERENCES at the end of each chapter include some of the fundamental publications for the principal's library.—*Editorial Committee.*

SURVEY OF THE SCHOOL USE OF SOUND EQUIPMENT

DON C. BROCKWAY
and
WILLIAM W. BROCKWAY
Engineers, Crown Amplifier Company, Los Angeles, California[1]

A STUDY MADE by the writers of centralized sound systems and related sound devices as used in the schools of America indicates the need of a greater understanding of the possibilities of sound in the schools.[2]

Nature and extent of study—The study was made to obtain data concerning the organization and administration of centralized sound systems for school use, including educational and business administration, educational utilization, and the engineering of these sound systems to meet the educational needs. Consideration has especially been given to increase utilization per cost of sound in education. The research procedure involved graphic analysis, preliminary literature survey, questionnaires, letters and interviews, final literature survey, and a follow-up on questionnaires and letters.

A list of 380 schools using centralized sound was compiled from reports of manufacturers, individuals, and writers. A questionnaire was sent to each of these schools. From these 380 schools 149 or 39.2 percent of the questionnaires were answered. Of these 149 questionnaires returned, 111 or 29.2 percent of the original number sent contained usable data. There was a return from thirty-three states. The 380 schools were located in forty-one states. All states but Delaware, Idaho, Maine, Mississippi, South Dakota, Vermont, and Wyoming were included in this number.

The study shows that schools using centralized sound are quite localized. New York has eighty-six or 22.6 percent—over one-fifth of the entire number included in the survey. New Jersey follows with forty-seven or 11.3 percent—over one-tenth of the entire number included in the survey. In the seven states, New York, New Jersey, Pennsylvania, Connecticut, Massachusetts, Rhode Island, and Maryland, all adjoining states, there are 211 or 54.5 percent of the entire number of 380 schools included in the study. From this mentioned group, New York and New Jersey have 133 schools or 33.9 percent of the total number of systems reported. A few of the states listed in order of the number and percentage of systems are: New York, eighty-six systems or 22.6 percent; New Jersey, forty-seven or 11.3 percent; California, thirty-two or 8.4 percent; Pennsylvania,

[1] Subsidiary of the Crown Body Corporation, Ltd., Los Angeles, California.
[2] Only brief statistics of the study made will be referred to in this article.

thirty or 7.9 percent; Ohio, twenty-one or 5.5 percent; Connecticut, Massachusetts, and Michigan each seventeen or 4.5 percent; and Illinois, Minnesota, and Wisconsin each nine or 2.4 percent. California's high rank is probably due to the fact that the writers know about the schools in that state.

From 109 schools included in the study there were 164 school grade levels. Of this number, twenty-five or 15.2 percent were of kindergarten level; thirty-five or 21.3 percent elementary-school level; thirty-nine or 23.8 percent junior high school; forty-eight or 29.3 percent senior high school level; one school or .6 percent junior college level; eleven or 6.7 percent university level; and five or 3.1 percent special type of schools of no classifiable level. Where it was thought that data received from universities and special types of schools would have effect to make the statistics less reliable for grade level use, these data were omitted. No considerable distinction seemed to exist between public grade schools or private schools concerning centralized sound and the study of it made. Therefore, data concerning private schools were included in the computed statistics.

Eight distinct units of sound used in schools—Presentday engineering makes available eight distinct units of sound amplification in the schools. These units are radio, phonograph, microphone, sound pictures, recording, telephone connections to a sound system, acoustic education for the hard of hearing, and radio broadcasting or amateur radiophone. Of the eight units mentioned, the writers find that from 106 schools reporting, the units were used in the proportions as listed in Table 1.

TABLE 1—VARIOUS UNITS OF SOUND USED IN 106 SCHOOLS

Combination used	Number of schools	Percent of schools
Radio, phonograph, microphone	52	49.1
Sound pictures	18	17.0
Radio, microphone	7	6.6
Radio	6	5.7
Microphone	6	5.7
Radio, phonograph, microphone, sound pictures	5	4.7
Phonograph, microphone	3	2.8
Radio, phonograph	3	2.8
Radio, sound pictures	2	1.9
Radio, microphone, sound pictures	2	1.9
Microphone, sound pictures	1	.9
Phonograph, sound pictures	1	.9
Total	106	100.0

NOTE: No schools reported recording, telephone connections to sound system, acoustic education for the hard of hearing, and radio broadcasting or amateur radiophone.

As Table 2 indicates, the schools using three units obtain greater

TABLE 2—UTILIZATION BY 106 SCHOOLS OF SOUND EQUIPMENT

Number of inputs available	Number of schools	Total number minutes used per week	Approximate average min. used per week per school	Percent of utilization according to number of inputs available
One	30	4,890	163.0	16.3
Two	17	4,737	278.6	27.9
Three	54	16,646	308.2	30.8
Four	5	1,250	250.0	25.0
Total	106	27,523	999.8	100.0

NOTE: Only five schools reported use of four input units. This limited number might account for less utilization of four units as compared with one, two, and three units. Only units reported in Table 1 are grouped in this table.

utilization than those using one, two, or four units.[3] Schools using one unit have a utilization of 16.3 percent of the total utilization in amount of time of all units compared to 27.8 percent for schools using two units, 30.8 percent for those using three units, and 25.0 percent for those using four units. These facts seem to indicate that utilization of sound systems increase as the number of units are made available.

An ideal sound system for schools—The greatest demand that could be placed upon a sound system by any individual room at any one time would never call for more than three units. This is to say that out of the eight available units of sound equipment, only a combination of certain units would be practical. For example, a practical combination might be radio, recording, and acoustic education for the hard of hearing. For the above reason and the fact that sound would not be used by all the rooms at any one time, centralized sound with an adequate distribution of inputs and outputs would be the most logical installation.

The central panel—The central panel or control should be located in the principal's or clerk's office or at some location where an operator may be had at any time. The system should have the output normally connected to all rooms and the input normally connected to the office for general announcements. A proper distribution system should be provided to enable complete flexibility of input and output of the system.

The power of the central panel should be divided into as many units or small powered channels as is practical for maximum utilization. This statement may be more easily explained by an example. A school that requires twenty watts of power for full operation may

[3] Only five schools reported four units in use. This limited number might account for less utilization of the four units.

be provided with four five-watt channels (amplifiers) in place of only one twenty-watt channel. This plan allows four separate units to operate at one time or a possible increase of utilization by four times. Engineering makes it possible to use the four channels separately or grouped. Flexibility is greatly increased by dividing the power in this manner. The number of channels and power necessary for any particular school is determined by the number of rooms, size of rooms, size of auditorium, size of playground, and organization of classes or program. There is no objective information available at present as to the optimum number of channels for maximum utilization in relation to the size of the school or its program.

From eighty-five schools reporting centralized sound, 61 or 71.7 percent of the schools had one channel; 14 or 16.4 percent had two; 6 or 7.1 percent had three; 2 or 2.3 percent had four; 1 or 1.2 percent had five; none reported having six; and 1 or 1.2 percent had seven channels. There was an average of 1.5 channels per school. The power of the average sound system as reported is 26.19 watts. The average number of rooms was 40.5 rooms per school. These data show twenty-seven rooms per channel. If this power of 26.19 watts were divided into three channels of 5.5 watts each instead of 1.5 channels at 17.4 watts there would be nine rooms per channel. By proper grouping of the normal distribution of the channels a very high utilization can be obtained with nine rooms to the channel.

Radio units—The radio unit of the system is located preferably at the central panel. There should never be more radio units than channels. The number of radio units necessary would be determined by the number of educational programs at any one time that could be used in the school program and the number of channels in the system. In a small town where there might be only one broadcasting station within reception range, it would not be necessary to have more than one radio unit. In large cities it may be necessary to have two or more radio units to obtain maximum utilization of the sound system.

The complete control of the radio should be placed in the hands of the principal or operator. The advantage of this is not to be overlooked: (1) the teacher needs to plan, to organize, and to direct the lesson, not merely to turn dials; (2) the principal is in a position to guide the teacher in the elimination of the non-educational materials; and (3) the centralization helps in the preparation of a definite schedule for the system's operation.

The writers found in their study that 111 schools had an average utilization of 143.14 minutes per week per school. Of this total utili-

zation, radio used 47.2 percent of the time of all the units. The reasons for the greater use of the radio is perhaps due to the greater supply of radio programs than of phonograph records or other sources of sound material for educational use.

Phonograph units—The phonograph unit or units should be portable so that they can be used in any room and easily transported from room to room. Distribution of this sound to any desired room or rooms is made possible at the distribution panel. The unit should be so designed as to allow for the playing of high speed and long playing records. A volume control incorporated in the portable unit allows for adaptation of the program to the room where it is being used. The usefulness of the phonograph in every classroom can be understood when we review the great number of records now available and the possibilities of special recordings.

The present study shows that phonograph records are used at an average of 39.84 minutes per week per school or 13.1 percent of the total time of all units. The main reason for this small utilization is due to the fact that the phonograph is not available in the classroom. Out of 111 schools reporting, not one school had a phonograph unit located in a classroom; and in 72 percent of the schools reporting, the phonograph was located at the central panel. Only 59.4 percent of the schools had a phonograph unit. From these data it is seen that the possibilities of the phonograph as an educational aid have not been greatly developed. The future may lead to the use of phonograph recordings to supplant as well as supplement textbooks. The possibilities of this unit as a teaching aid in almost any school subject are unlimited.

Microphone—The microphone is not limited in its use to the auditorium or the office for general announcements. The ideal system provides for a microphone in every classroom. The microphone is used in connection with recording, radio broadcasting, and acoustic education for the hard of hearing as well as for general announcements, directions to the teachers, and sound amplification. Utilization of speech amplifiers in classrooms quickly demonstrates the many possible educational advantages.

The number of microphones that should be necessary varies with each school. At least one microphone for the office and one for the auditorium or portable use are necessary. The office microphone should be a permanent unit. The probable number of microphones would be one for every channel.

The present survey shows that 45.4 percent of 77 schools reporting have no microphone at all—an average of 1.62 microphones per school

or approximately one microphone per channel. These microphones are each used 75.59 minutes per week per school on the average, or 24.9 percent of the total time reported for sound system utilization.

Sound pictures—Sound pictures for educational purposes have been shunned due to costliness and lack of films with the proper educational material. The shortage of educational materials is probably due to the absence of demand, which in turn may be traced to the lack of equipment. The solution is to reduce the cost of equipment. A centralized sound system is the nucleus of sound pictures. With the new developments of 16 mm. sound pictures it is possible to have sound pictures in every classroom. With very little additional cost the obsolete silent stationary type of projection machine may be converted into a sound picture projector and the centralized sound system used as the amplifier.

Data from the present survey show that the 111 schools report the use of sound pictures for an average of 44.36 minutes per week per school. Practically all this use is for entertainment purposes. Sound pictures utilize 14.7 percent of the time reported of all units.

Recording—The recording equipment can either be portable or stationary. The portable equipment would be of the pre-grooved type while the stationary recording unit would be a precision type of machine.

The present recording methods on pre-grooved discs are adequate for playback purposes when not more than ten to twenty playbacks are necessary. While the quality of the pre-grooved recording is not as good as the precision method, nevertheless, the pre-grooved record is adequate for most school uses. The cost of pre-grooved records is small in comparison to the educational value of recording in schools. The pre-grooved method is most adaptable to portable use. In short then, recording in the classroom is possible with a properly engineered sound system.

The precision type of recording calls for more mechanical equipment because it necessitates a method of feeding and gauging the cut of a non-grooved disc. This type of recording instrument has been developed and is used for playback purposes in motion picture studios. The quality of the recording compares very well with commercially recorded records. While the original cost of this type of equipment is more, the final results are superior. This type of recording is good for at least one hundred playbacks.

The present study indicates that from 111 schools reporting, recording had not been used by any school below the university level. Two

universities reported the use of recording equipment in speech work. This equipment was not connected to a central amplifying panel.

The writers feel that the use of recording in schools has enumerable possibilities. A brief listing of possible uses is as follows: (1) speech correction, (2) recording radio programs to be played back at some time when they would fit the educational program, (3) recording of daily bulletins, (4) recording of special lessons, (5) recording of special speeches or pupil activities, and (6) recording of teaching for supervision and rating.

Telephone connections to central panels—Connecting the centralized sound system to the telephone lines is possible and has been done for broadcasting purposes. The actual connection would have to be made by the telephone company thru proper line terminations.

Such a telephone connection might be used to bring into the school the voice of the superintendent, supervisor, master teacher, and others where it would be best not to use the radio as a means of communication. School telephone networks may be of great advantage in larger school systems and would replace the radio in some cases. The full possibilities of this type of communication will have to be developed, but it appears to have a definite place in education. The present survey shows that no school has attempted the use of a sound system in this manner.

Acoustic education for the hard of hearing—Statistics show that approximately 70 percent of the "deaf" children in schools have sufficient hearing to take the class work thru the amplification of sound.[4] In schools where it is possible to group these students in special classes, the use of head receivers and a microphone thru the central amplifier would aid in the education of the hard of hearing. The use of head receivers in an auditorium or in large groups would also be of great aid. Practically all the other units mentioned in connection with centralized sound are also applicable to acoustic education for the hard of hearing. For example, the radio and sound pictures could be used in the educational program the same as for normal children. The present survey shows that no school made use of centralized sound for acoustic education of the hard-of-hearing children.

Radio broadcasting or amateur radiophone—For all radiophone communication, some form of audio frequency amplification is necessary in order to modulate the radio wave. In schools where this type of work is carried on, either experimentally or commercially, the

[4] According to a communication from E. J. Meyers, Pittsburgh, Pennsylvania, manufacturer of the Radiocar.

centralized sound system is the basic amplifier. A duplication of costly equipment is not necessary when the science or electricity classes study practical radiophone communication or radio broadcasting. All junior high schools and high schools could use the centralized sound system in encouraging hobbies or a permanent vocational interest in radio and sound equipment.

Where it is possible to do educational broadcasting from a school station, the centralized sound system could be used for the speech amplifier and in some cases as the modulator. This type of use is limited by the license restrictions of the Federal Radio Commission. The use of the school's sound equipment in connection with an amateur radiophone would be more practical in most cases.

Conclusion—It is not possible here to indicate the full possibilities of centralized sound in the schools or the extent of the survey made by the writers. Only the general nature of the subject has been indicated. The field for development and research in any one of the eight mentioned fields is practically unlimited, and the future educational value of such a sound system as proposed by the writers, depends upon the cooperation of the educator and the engineer.[5]

[5] Brockway, Don C. and Brockway, William W. "Sound System Organization For School Use." *Education on the Air, 1933.* Columbus: Ohio State University, 1933. p. 334-42.

BY BRINGING leaders in education and other leading men before the microphone, the importance of education may be brought to the attention of the pupil, and to that other group, which has so much to do with increased opportunity in education—the parent and the public.

The patrons and parents of the school may be kept informed of educational progress thru listening to radio lessons.—Jarvis, Emerson D., *American School Board Journal,* November, 1930, p. 36.

THE USE OF PHONOGRAPHIC RECORDING IN IMPROVING CHILDREN'S SPEECH

HELEN L. HULTZ
Teacher, Fox Meadow School, Scarsdale, New York

PHONOGRAPHIC RECORDING has been used in teaching and measuring results in speech work, oral reading, dramatics, and music, but as yet little has been done with it in the field of oral conversation. A group of children who are working together in a school situation naturally have many experiences which are of interest to the group as a whole. An opportunity for them to meet and share such experiences gives rise to a free group conversation period. In recounting their experiences children vary greatly in ability to express ideas interestingly. Some set forth their ideas clearly and vividly centering them around a specific incident while others have difficulty in visualizing clearly the ideas they wish to express and in telling them directly.

This report summarizes a controlled study that was carried out over a period of one month with two fourth-grade groups to determine the effectiveness of phonographic recording in the improvement of certain mechanical elements in the children's oral use of English. It contrasts the progress when sound records were made by children and used by them as a basis of correction with the progress made when children were given oral direction by the teacher.

Common errors in speech—The analysis of the results shows that the children who made and discussed records improved more than the group given oral corrections by the teacher in the following points; in ability in phrasing ideas, in indicating sentences, in avoiding unnecessary words and repetitions, in presenting ideas without changing the point of view in the telling, in correcting multiple starts, and in eliminating the use of "well" and "and" as initial words in sentences.

The two groups of children had had similar experience in free group conversation prior to the study and their recordings included such stories or incidents as they were accustomed to tell in their conversation period.

During the five weeks' experiment both groups were taught by the same teacher. Both groups made beginning and end records and were given equal opportunity to talk between their first and last recordings. The first group, called the control group, heard none of their records. The second group, called the practise group, made three intervening records between the first and the last, or an average

of a phonograph record a week. They heard all of their own records and discussed them.

An analysis of the records reveals the following difficulties that were characteristic of the talking ability and speech habits of these children.

(1) *Incorrect phrasing*—The habit of breaking ideas at any accidental place rather than in thought phrases is called incorrect phrasing. The nature of this habit is shown by the breaks in the following samples:

. . . . I was playing with my bo, boy friend that I play with—and he—was riding on the pony'nd—it didn't have a saddle . . . .

. . . . some—earphones and, and then—weuh—found these magnets . . . . .

. . . . we had a lot of fun we—were—timed around the ring . . . .

. . . . 'N my father—'n he caught a great big fish'n—it was a great big weak fish . . . .

Ten children of the control group made this type of error in the initial recording and while by count the total number of instances of incorrect phrasing was reduced from 27 to 16, the number of children who still showed difficulty in the final recording was 11. In the practise group's first recording 8 children phrased incorrectly; in their final recording, 3 children.

(2) *Long pauses*—When children forgot what they wished to say or when their talking rate exceeded their ability to keep their thoughts in organized, expressible form, we had the difficulty known as long pauses. The pauses are indicated by dashes:

. . . . his was uh—uh—Pluto.

. . . . then I got stuck and—then Kathleen—had to uh, eh, change and try to get ah, me out . . . .

. . . . 'N we were hunting for it.—We, we, we dug up a whole lot of this uh hay.—'N we jumped . . . .

. . . . So uh,—so they uh—so he enjoys talking about my brother's motorcycle . . . .

There were twelve children of the control group who showed a tendency toward long, uncertain pauses during narration in the initial recording and nine in the final recording. The number of children who showed this error in the practise group was four. This difficulty, which persisted thruout each recording, may indicate that it is not corrected by merely hearing it.

(3) *Sentence sense*—An outstanding difficulty is the lack of sentence sense as shown by the number of sentences indicated by voice inflection as compared to the apparent number of grammatical

sentences used. In the following transcription the child in telling indicated two out of fourteen possible grammatical sentences.

MAKING A CANOE

One day Frank and I, we, he, didn't know what, what to do and so we thought we'd make a canoe and have a little fun in that. So we found an old log and hollowed it out with uh stone and then, and then got in it 'n and we played that we were going over to all different foreign countries and we had lots of fun in it and then we'd stop it 'n anchor it and then we'd go in little places and pl, play we had a ship, shipwreck and then we had lots of fun in it and it was one day he got turned over and he was laying right in the, in the thing there, in the dug out part of it and he, he didn't know how to get out and the thing was wiggling and wiggling and then I had to turn it over and then one day we split it in two and that was all.

In the first recording the control group indicated by voice inflection 39 percent of their possible grammatical sentences, in their final recording, 55 percent. The growth in the practise group was from 41 percent to 84 percent in indication of sentences used.

(4) *Unnecessary words*—A number of the children used a large percentage of superfluous words, repeated words, part words, and "ands." Frequently during the telling unnecessary vocalizations and words such as "eh, uh, well, oh, ah, a, so, m, y, er, just, then, but, and yuh" indicate that the child has no definite point toward which he is aiming. In the following story 20 percent of the words which the child used are unnecessary.

We had company one Sunday quite a while ago 'n there was this big boy he was about fifteen years old and he was very fat. 'N we were playing hide-and-seek for a while and, and we, and he, h, I don't know, and my sister was it. And he went into the kitchen and he didn't have any place to hide. 'N at last, 'n my sister came around and so he got in the broom closet and he was so fat and when, when my sister found him he, he couldn't get out 'n 'n he said, "Help, help I'm stuck" 'n 'n my father had to come and pull him out.

The control group reduced the use of extra words from 20 percent to 13 percent while the practise group using 18 percent unnecessary words at first, were using but 5 percent at the end.

(5) *Repetitions*—Thruout the telling the habit of repeating words and phrases was a common difficulty. The following samples are typical of this tendency:

When I went to the rodeo this year there uh, puh, part of the things I saw . . . . and, and some of them, and some of these men they timed, they timed and, and it, it was goo, good . . . . after they uh unloosened the steers they, they uh, there was a clown rode on a steer's back.

. . . . I went ice skating, ing. I went with, with my friend . . . . and uh, and we, we had a lot of fun . . . .

Eighty-three percent of the children in the control group repeated words and phrases at first, and 52 percent at the end. In the practise group 86 percent of the children repeated at first, and 33 percent at the end.

(6) *Changes in point of view*—During the telling of incidents or stories some children evidenced an inability to carry an idea thru to a completed form once they had started to express it in a certain way. This difficulty may also indicate insufficient attention to ideas while talking:

. . . . My father thought if they, if he'd roll down the hill it would, the motor would start going. So he had it stop, it stopped at the bottom of the hill . . . .

. . . . 'N I, 'n I have a story of Robert E. Lee 'n we, we have, we get a magazine it's called the Richmond magazine. 'N we, they—uh a picture in it there's a whole lot of pictures . . . .

In the initial recording sixteen children in each group showed a tendency to change the point of view during the telling of an incident. There was no growth in the number of children correcting this error in the control group while all but seven of the practise group corrected the error.

(7) *Multiple starts*—When there is an uncertainty of idea we may find a tendency toward multiple starts as follows:

The other morning when I, when my, I was practising the piano, when my brother, the maid sent up for him . . . .

Election day we, when we, when we were listening, my father and I, to the radio, to the votes, and the, the, all these votes . . . .

I dreamt that it was the, the day that we, we, that the men had some . . . .

While the total number of multiple starts was reduced in the control group 12 children showed this tendency in the first recording and 13 in the final. In the practise group, 13 children made errors in this item at first as compared to 4 in the end recording.

(8) *Initial words*—At first all of the children in both groups used "and" as the initial or connecting word of sentences. Of the group that did not hear their records 96 percent still continued in this habit. Fifty-two percent of the children who heard their records, completely eliminated its unnecessary usage.

Definiteness in telling stories—Improvement was noted in some of the less objective items of the study such as keeping the talk about

one topic and definiteness in telling. These samples contrast indefiniteness and definiteness of telling:

INDEFINITE TYPE

Well I don't know *when* it was, but I,—I think it was the day after yesterday, but anyway—my brother had this book and it had about, I don't know just what it was about 'n it had a lot of things in it 'n he found how the earth, what makes the earthquakes 'n it said 'n the other, 'n the other page it said, "Why not make your own earthquakes?" So we decided to and we had to take a lot of books and put 'em I don't know *how* many books under it 'n then take one book and we had to put a lot of—o-oh toys up on top 'n, 'n to represent villages 'n people 'n cars 'n everything like that—and—uh so he, he knocked a book under and it all fell down.

DEFINITE TYPE

A MOUSE IN THE HAMPER

We caught a mouse in the hamper, just the wrong place. I could har, hardly go to school I was so excited. When I came home I said, "Where's the mouse?" The maid said, "Mugs killed him." Mugs is our dog. He kicked over the hamper and my sister sat up on the stove, my mother waited with a broom by the radiator because there was a hole some place around the radiator but then a mouse ran up, down into the cellar so he could get away and my, my dog got him on the first pounce.

These samples are the initial and final recording for one child. They give an idea of the growth made:

INITIAL RECORD

(Sentence conscious, but begins sentences with "and.")

My brother was sick in bed with the croup. And last night he was talking in his sleep. 'N he said, "Oh boy, mine turned out to be an elephant." 'N it was his birthday about three days ago 'n he got uh, uh book and it was called, "Can You Answer, Can You Draw It?" 'N there were these numbers, 1, 2, 3, 4 n' you drew from one to another and he, and that night he drew a big elephant in his sleep. 'N when he woke up in the morning he found that he had scribbled six pages in his book.

FINAL RECORD

(Definite, very interesting, a highly satisfactory attainment.)

Yesterday my father and mother went to the football game in New York. They came back at half past one in the morning. At one o'clock a car stopped and parked right opposite our house. Two men and a lady got out in a great hurry. One of the ladies was dressed in a cape, the other was dressed in a black and the man was dressed very queerly. Our chauffer noticed them as they got out of the car and he was locking the house. In the morning my father went out and looked at the car. He came in and called up the police. A few minutes later a policeman came up on a motorcycle and looked all over the car, and then about twelve o'clock (end of record).

Summary—The two groups of children were approximately equal in the errors they made on the first records. The errors for each child were counted covering these points: incorrect phrasing, pauses, number of sentences not divided, unnecessary words, repetitions in

words and phrases, changes in point of view, multiple starts, "well" and "and" as initial words, and errors in grammar.

The average child in the group making and discussing records decreased his errors by 31 while the average child who did not hear his records and received only oral suggestions from the teacher decreased his errors by only 15.

The significance of the difference in these gains gives an experimental coefficient[1] of .90 or a chance of about 160 to 1 that repeated under the same conditions the results would again favor the group that made and discussed their records.

Stated in more general terms the results may be summarized as follows:

(1) There is a definite tendency in both groups to shorten talks with an effort toward improvement.

(2) Growth in definiteness of telling was more apparent when children centered their talks around one incident.

(3) Children who heard their records tended more and more to use titles for their talks.

(4) More children talked who had an opportunity to hear their records.

(5) The use of the records favors greater and more rapid growth in the mechanics of expression such as correct phrasing; speaking in sentences; omitting unnecessary words, repetitions, changes in point of view, multiple starts, and initial "ands."

(6) The use of records favors more rapid growth in directly and progressively telling an incident.

(7) Records furnish a vivid means of making a child conscious of needed speech improvement.

(8) The records provide an opportunity to analyze exact difficulties and thereby direct efforts toward improvement in oral language.

(9) The records provide a permanent mark by which improvement may be noted.

(10) Making and hearing of records seem definitely to add to the children's enjoyment of oral language.

[1] McCall, W. A. *How to Experiment in Education.* New York: Macmillan Co., 1923. p. 155.

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CHAPTER X

SUMMARY OF RESEARCH

EDITORIAL COMMENT

ALTHO THIS YEARBOOK discusses only a few of the numerous devices available to the modern teacher there may be many who will feel overwhelmed by the number of available aids. This state of affairs has been responsible in part, at least, for the urge to discover the best devices. Again and again the question has been asked: "Which aid is best?"

This dissatisfaction with attempts to utilize a mass of devices without some understanding as to their relative merits has led to many experimental studies. The effectiveness of lantern slides has been tested. Silent motion pictures have been compared with those combining sound and motion. Maps of various kinds have been utilized in teaching situations and the results noted.

Unfortunately many of these experiments and tests have been conducted under conditions which cannot be accepted as valid research. Other studies are as yet unpublished and adorn the shelves of the libraries of our graduate colleges. A number of the most promising researches have been brought together in the following chapter, altho no claim is made that the present review is all inclusive.

One caution needs to be made at this point. Too frequently teachers are seeking the *best* device for all content and all conditions. This search for the *summum bonum* always results in disappointment, for no perfect aid to teaching exists. Every device has its advantages under *certain* conditions. Every device proves ineffective or unsatisfactory in other situations. Research studies usually indicate that under a given set of conditions certain results may be expected. It is almost always unwarranted for anyone to make generalizations and universal applications of conclusions which the research student did not have in mind. Let us recognize that devices are our "working tools" each with its special functions and each with its very definite limitations.

It is the sincere hope of the Editorial Committee that the research summarized in this chapter will lead principals to make equally careful studies in their own schools. Further refinement of the technics and verification of the findings is greatly needed.

Reference to copies of the original studies which are herein summarized will reveal to principals a wealth of helpful suggestions for the improvement of instruction.—*Editorial Committee.*

EFFECTIVENESS OF AIDS AS SHOWN BY RESEARCH[1]

THE BELIEF is sometimes held that the purpose of research in the field of aids to teaching is to discover panaceas. Altho some of the investigators may wander about as aimlessly as Ponce de Leon in search of the Fountain of Youth and while some of the results may be as barren as the deserts which concealed the fabled Seven Cities of Cibola—the skilled investigator seeks no unattainable vision. He is, however, usually attempting (1) to determine the field in which a particular device is most useful, (2) to determine the specific conditions under which the aid is most effective, or (3) to determine whether or not a particular device has enough merit to warrant its general use.

This chapter summarizes briefly a number of the efforts to evaluate more or less objectively the instructional uses of various aids.[2] It is rather difficult to classify these studies either in terms of the type of aid or the particular content because of the great variation in teaching technics. However, the following main headings have been used: (1) flat or mounted pictures, (2) slides and still films, (3) motion pictures in general, (4) motion pictures compared with other aids, (5) radio, (6) miscellaneous methods and devices, and (7) a few general conclusions.

FLAT OR MOUNTED PICTURES

LEWERENZ[3] attempted to evaluate flat pictures as a teaching aid. The subjects were 359 children in the eighth grades of several junior high schools. The classes included children from all types of homes and the median intelligence of the entire group was 107. The pictures were photographic stills taken from the motion picture "Columbus." They were fastened together into sixteen units consisting of eight pictures each. Half of the pictures had a sharp finish and half had a soft finish. Accompanying each picture was a brief historical description to give the necessary facts. A test, consisting of one hundred true-false statements, was used to find how much the children had learned. The children were allowed to look at the pictures as long as they wished and then they were given the test. The author concluded that the pictures made a possible gain of 15 percent in knowledge. Children of less than average intelligence profited

[1] Prepared for the Editorial Committee by the Research Division of the National Education Association.

[2] For further reviews see current numbers of the *Review of Educational Research*, prepared by the American Educational Research Association, a department of the National Education Association.

[3] Lewerenz, Alfred S. "Some Results of a Visual Education Lesson in Junior High School Social Studies Taught with the Aid of Flat Pictures." *Los Angeles Educational Research Bulletin* 9: 4-16; November, 1929.

more than those of higher intelligence. Pictures used for those of superior intelligence should necessitate "some serious thinking." Boys seemed to prefer a greater variety of pictures than girls. Close-up views may be given a soft or diffused finish but long shots apparently are better when given a sharp finish.

WEBER [4] compared the progress of pupils where the lessons were taught orally and where the oral presentation was combined with stereographs. The subjects were twenty pupils from the sixth grade and sixteen college students. Each lesson required only five minutes. After testing the pupils with a battery of three tests the author found that the average gain amounted to 7 percent when the oral method was combined with the stereographs. The mean score of the non-visual lesson was used as a base for computing this percentage. In practically all tests the average score of the lesson combined with visual methods was slightly higher than the achievement of the non-visual. Comparisons were made also by Weber between oral instruction alone and oral instruction with lantern slides. In this case seventy-six subjects in the third to sixth grades were used. The lessons were five minutes in length. The average gain in learning was 8 percent higher for the visual lessons. Statistically this was believed to be a genuine difference. Lantern slides combined with verbal instruction were more profitable than verbal instruction combined with stereoscopes.

MACLEAN [5] attempted to determine objectively whether colored pictures were superior to plain pictures. In the experiment 152 boys of high-school age were used. They were divided into two groups of approximately equal age and intelligence. Ten pictures were shown, illustrating geographical and historical facts. A test was given consisting of twenty questions. The author found that altho the colored pictures were superior in eliciting the correct answer more frequently than the plain pictures, the difference was slight. Other conclusions: first, that colored pictures are superior in producing the illusion of distance; second, the colored pictures are superior when the color is used to enhance existing contrasts; third, when the visual experience is chiefly architectural and engineering detail, color has less value; fourth, color may concentrate the attention of the observer upon a limited portion of the illustration; and fifth, color is useful in conveying the impression of sunlight and warmth.

[4] Weber, J. J. *Picture Values in Education.* Chicago: Educational Screen, Inc., 1928. p. 53-83.
[5] MacLean, W. P. "A Comparison of Colored and Uncolored Pictures." *Educational Screen* 9: 196-99; September, 1930.

STILL FILMS AND SLIDES

Spelling

ZYVE[6] measured the results of different methods for the visual presentation of spelling words. One of her comparisons was between the presentation of words on the blackboard as compared with lantern presentation. The plan of lantern presentation was as follows:

Monday—Present each word in turn with the lantern. Use the word in a sentence or have the children give sentences containing it. Dictate the list for the week. Present each word again with the projector for correction. The children with 100 percent are excused from study for the week.

Tuesday—The teacher teaches the words according to the same study plan.

Wednesday—The children write the class list of words for the week. The words missed are taught by using slides.

Thursday—The teacher dictates the words in the week's list in sentences. The children correct these from the slides. The teacher reteaches the words missed, again using the projector.

Friday—The teacher gives a test on all the words for the week. The slides are presented for correction. All missed words are retaught using the lantern.

Zyve concluded that the use of the lantern for the presentation of words gave better results than the use of the blackboard when combined with other methods and devices. The method seemed to work satisfactorily with poor, medium, and good spellers. Apparently a method combining visual presentation thru lantern slides, teacher-directed study, and the list context method is most effective.

Geography

MEADOR[7] used still films to determine the value of pictures in the teaching of geography. Each film contained from twenty to thirty views depicting life, industries, occupations, and geographical features. The study used 420 children who were in grades four, five, six, and seven. The three schools involved in the study were taught as follows: School A, lessons taught verbally without pictures; School B, pictures shown as a supplement after the verbal instruction; School C, still films shown on the screen and the entire lesson based upon it with much discussion and attention to the screen images. Before the experiment began, each class was given a test followed by a test at the end of the experiment and another, one week following the experiment. The average median gains for the three schools were as follows: 1.375 for School A, 1.75 for School B, and 2.05 for School C.

Meador concluded that pictures aid in the teaching of geography in the elementary schools. The test a week following the experiment

[6] Zyve, Claire. "The Effect of Lantern Presentation on the Learning of Spelling Words." *Educational Screen* 9: 297-98, 310; December, 1930.

[7] Meador, Mildred. "Are Pictures an Effective Aid in the Teaching of Geography?" *Educational Method* 11: 97-103; November, 1931.

showed that while Schools A and B had actually lost ground, several of the grades in School C had actually raised their scores. It was believed that the emphasis upon pictures during the experiment aroused an interest and search for pictures following the experiment in the case of the pupils of School C.

WILBUR [8] attempted to discover whether or not visual instruction in geography was worthwhile in the eighth grade. The subjects were three eighth-grade classes of boys. Classes were equated on the basis of age, ability, and training. One class used the textbook alone. Another group used the textbook plus photographs, postcards, and exhibits. The third group used all of the preceding devices plus stereographs and slides. At the end of five periods of instruction (two-hundred minutes) a test of five questions was given to all three classes. Then one week later another test of five questions was given to all three classes. In both tests the group using all of the devices, including stereographs and slides scored on the average higher than the other two groups. The author believed that by the use of stereographs and slides the facts were more firmly fixed and better understood.

LEVINE [9] attempted to compare the retention following the use of visual and auditory aids in geography. Forty-two subjects were used, divided into two groups which were equated according to general ability and intelligence. After teaching both groups alternately by visual and auditory methods, he found that the gain under visual aids between the initial test and the final test was greater by about 3 percent than under the auditory method. The subjects were then divided into three groups. One was taught by visual methods, one by auditory methods, and one by a combination of the two. The average gain was computed and the author concluded (1) that it is better to teach geography by visual instruction than by auditory instruction, and (2) that visual instruction is more effective than a combination of visual and auditory instruction. This latter statement was largely personal opinion and was not directly supported by the results of the study.

History

ROSS [10] compared the effectiveness of verbal presentation with verbal presentation plus pictures. The subjects of the study were

[8] Wilbur, Howard. "An Experiment in the Use of Visual Methods of Instruction." *General Science Quarterly* 12: 480, March, 1928.

[9] Levine, A. A. *A Comparison of Memory by Visual and Auditory Presentation in the Learning of Geography.* Unpublished master's thesis, College of the City of New York, New York, 1927.

[10] Ross, C. L. "The Value of Pictures in Teaching History." *Journal of Educational Research* 17: 113-16; February, 1928.

two classes of tenth-year students equated on the basis of ability. The material taught consisted of twenty-two paired phrases from history, such as "Duke of Enghien—shot by five soldiers," and "Napoleon on hunt—meets Pope Pius by roadside." In the final test the pupils were required to match the paired phrases. The author concluded that pictures were generally a help rather than a hindrance in a presentation of the materials described. At the same time there were often verbal presentations which pictures did not aid and sometimes hindered.

LAWSON [11] sought to discover and to measure the differences in the value of the recitation textbook method found in most schools with the visualized recitation method, using the textbook more as a lesson guide. The experiment was conducted for twelve weeks with an eighth-grade class of thirty-six pupils. These pupils were divided into two groups of approximately equal ability. Both groups were taught by the same teacher. For the first six weeks one class studied history by means of visual aids, while the other class had the same lesson without visual aids. During the second six weeks the teaching methods were reversed. The same tests were given to both classes every two weeks. The visual materials consisted of slides, pictures from magazines, and photographs. At the end of the first six weeks the visual group scored about 8 percent higher than the non-visual group. At the end of the second six weeks the visual group again scored about 8 percent higher. Except in the case of one child, every member of the visual group at the end of the second six weeks received a higher score than the average score of the non-visual group. The author believes that the visual aids developed more class or group interest in the lessons.

Reading

STEINER [12] compared three groups (fifteen third-grade pupils each) taught by three methods: first, the regular reading activity or control group; second, a group taught by the regular method plus flash cards; and third, a group taught by regular teaching methods plus lantern slides which contain the same material as the flash cards. Four tests were used to measure the progress made by each group. Two of these tests were home-made and based upon the material used in the flash cards, and two of the tests were standardized reading tests. The results showed that both of the experimental groups

[11] Lawson, Oliver C. *An Experimental Study of Visual Methods in the Teaching of Eighth Grade History.* Unpublished master's thesis, Stanford University, Stanford University, California, 1929. 40 p.

[12] Steiner, M. A. "An Experiment in the Use of Flash Cards and Prepared Lantern Slides." *University of Pittsburgh School of Education Journal* 3: 103-11; May-June, 1928.

made greater gains in comprehension and rate than the class taught by the regular methods. As measured by standard tests the flash cards were more effective in improving the rate of reading than similar material presented by lantern slides. Apparently those pupils who had been subjected to the lantern slides had a greater ability to recall. There seemed to be little transfer of rapid reading ability from flash cards and lantern slides to the printed page.

Colored Slides

LEWERENZ [13] tried to discover what the difference was between the ability of children to gain worthwhile information from plain as contrasted with colored lantern slides. The slides used in both cases were identical excepting for the matter of color. Pupils in the fourth grade of seven schools participated in the experiment. The test was in the form of a true-false examination of twenty questions. There was a pre-test of the twenty questions followed by a showing of the slides and then a final test. According to the results the colored slides were only 88 percent as effective as the plain slides. Apparently the showing of slides without an explanation brings no marked increase in knowledge. Children show a two to one preference for slides that are tinted but the content of the picture is the important factor.

MOTION PICTURES IN GENERAL

EINBECKER [14] attempted to determine the relative values of talking and silent motion pictures. The experiments were conducted in connection with ninth-grade classes in general science and eleventh- and twelfth-grade classes in physics. Pupils were grouped into equivalent groups by means of an intelligence test and in the case of the eleventh- and twelfth-year students by means of a preliminary test in physics. The methods of presentation were as follows: (1) silent film without captions or oral comments; (2) silent film without captions but with oral comments by teacher; (3) silent film with captions alone; (4) silent film with captions and with oral comments by teacher; and (5) talking pictures. Following the presentation of these various methods the classes were tested by means of a diagram and completion test. The investigator concluded that the talking picture had little or no advantage over the ordinary silent picture when

[13] Lewerenz, Alfred S. "The Educational Effect of Coloring Stereopticon Slides." *Los Angeles Educational Research Bulletin* 8: 8-13; October, 1928.

[14] Einbecker, William F. "Comparison of Verbal Accompaniments to Films." *School Review* 41: 185-92; March, 1933.

accompanied by well-planned comments of the teacher. The motion pictures used were expository or scientific in type rather than those involving dialog or dramatic action.

KNOWLTON AND TILTON [15] attempted to measure the contribution of photographs to the enrichment, retention, and creation of interest. They used ten historical dramas setting forth important developments in American history. Some of the titles of the films used were "Jamestown," "The Pilgrims," and "The Declaration of Independence." Progress was measured by giving a test at the beginning and again at the end of the experiment. Enrichment was determined by noting progress along four lines: (1) knowledge of time; (2) knowledge of historical geography; (3) knowledge of persons; and (4) knowledge of the interaction of events. Interest was measured by observing classroom participation, by opinion of the pupils, by the record of history reading outside of class, and by the amount of voluntary reading under controlled classroom conditions. The subjects of the study were 521 pupils of the seventh grade. They were divided into fifteen sections of approximately thirty-five pupils each. Six sections formed the control group and six sections were the experimental group. Among the conclusions were the following:

(1) The ten photoplays increased the learning of pupils by about 20 percent.
(2) The movies were particularly helpful in teaching the interrelationships involved between events and forces.
(3) The pupils who were taught by photoplays remembered 20 percent more after three months.
(4) The photoplays increased noticeably the amount of participation in classroom discussion.
(5) The photoplays had no apparent effect upon the rank given to history in relation to the other school subjects.
(6) Pupils who were subjected to the photoplays did not read more history in the school library nor did they read more history outside of school, altho they did read more in connection with the regular class instruction.

PORTER [16] made a study of the rate of forgetting in different types of action in motion pictures. Six movies were shown to pupils of four age levels, ranging from the second grade to graduate students and teachers. Multiple choice tests were used to cover the general information and the specific information shown by the movies. The six different types of films used in the experiment were: (1) romantic drama; (2) fantastic presentation; (3) technicolor revue; (4) an

[15] Knowlton, Daniel C. and Tilton, J. Warren. *Motion Pictures in History Teaching.* New Haven, Conn.: Yale University Press, 1929. 182 p.
[16] Porter, Elfa McWilliam. *The Curve of Retention in Moving Pictures for Young Children.* Unpublished master's thesis, University of Iowa, Iowa City, Iowa, 1930. 119 p.

adventurous romance; (5) a detective story; and (6) a comic stage revue. There were fifty-seven boys and sixty-three girls in the experiment. The testing program consisted of a pre-test for general and specific information. This test was repeated after each movie was shown. There were also similar tests one month and two months after the completion of the experiment. Among the conclusions were the following:

(1) The correct responses to items of general information were increased 33 percent as a result of seeing the show. At the end of one month the number of correct responses had increased 6 percent further. At the end of two months the observer still made 98 percent as many correct responses as in the test following the show.

(2) For all items the children tend to answer more correctly at the end of one month than they do the day following the picture. There is, however, a slight decline by the end of two months. Background items with dramatic, thrilling, and emotional action are remembered with 10 percent more accuracy at the end of two months than immediately after the show. Other background items show some loss at the end of two months.

(3) Memory for the plot of the movie is higher at all times than it is for incidentals. Incidentals are forgotten more rapidly than the general plot. As compared with the curve of forgetting both nonsense syllables and poetry the curve of forgetting movie facts is just the opposite. That is to say, with the passing of time the facts remembered about the movie tend to increase in accuracy. The author offers no explanation for this phenomenon altho it may be explained on the basis of associational processes and discussion with others who have seen the same picture.

GOODYKOONTZ [17] and others attempted to determine the influence of sound pictures on learning. Ninety-seven boys and girls from eighth-grade classes thruout the United States were assembled in Washington, D. C., for the experiment. They were given true-false and multiple choice tests covering the general topics of five selected movies. The movies dealt with the subjects of "Toads," "Monarch Butterflies," "Volcanoes," "Glaciers," and "River Valleys." In these films several well-known authorities explained and pointed out the data shown on the screen. Among the conclusions were the following: (1) While the boys usually had higher scores on the initial test than the girls, the girls averaged greater gains as the result of exposure to the films; and (2) both boys and girls gained about 38 percent over their knowledge as shown by a pre-test.

CONSITT [18] made a study in England to ascertain the amount of help in history teaching that was available in films; and second,

[17] Goodykoontz, Bess and others. *Sound Pictures as a Factor in Education.* New York: Fox Film Corp., 1931. 11 p.

[18] Consitt, Frances. *The Value of Films in History Teaching.* London, England: Bell and Sons, 1931. 431 p.

the best method of using the films; third, the best type of film to use; and fourth, the practical consideration involved in the installation of projectors in schools. The 504 children used in the experiment ranged from eleven to fifteen years of age. The children were divided into three groups equated by means of an intelligence test. The films were used simply to supplement the regular instruction and not as a substitute for teaching. The author concluded that the film tends to give life and interest to historic facts. It helps children to remember facts about the lesson. Little or no objective evidence was presented by the author to show the basis of various conclusions.

Another experiment [19] in England attempted to determine the place which sound films would occupy eventually in school work. Both silent and sound films were used with more than 3500 pupils. Each class was divided into two sections, one receiving a preparatory lesson, the other having no preparatory lesson prior to the showing of the film. Pupils were tested at the conclusion of the picture study and also after a lapse of a number of days. Teachers were asked to make comments upon the educational possibilities of the films. Practically no conclusions were reported as to the results of the tests given to pupils. The teachers believed that the films stimulated the pupils and resulted in greater learning. Most of the teachers preferred the sound films to the silent films. Teachers of classes of backward children were especially enthusiastic.

POOLE [20] attempted to determine the best method of presenting motion pictures to mixed elementary groups. The six procedures were as follows: (1) informal discussion for the children while viewing the film; (2) lecture by teacher during presentation of film; (3) no talking or discussion of presentation at any time; (4) discussion of the film topic under a student chairman or the teacher preceding the showing of the film; (5) discussion of the film, either under a student chairman or the teacher after the showing of the film; and (6) a combination of the last two. The children used were in the fourth, fifth, and sixth grades. The presentation of the film took place during a forty-minute period. Objective tests were used after the showing of the film to measure the retention of facts. The classes were paired on the basis of age, grade, and reading ability. The author concluded that the best results were obtained when there was no introduction to a film but a review and discussion after the presen-

[19] Middlesex County, England. *Sound Films in Schools.* London, England: The Schoolmaster Publishing Co., 1931. p. 120.

[20] Poole, Irene. "The Motion Picture in the Classroom." *Educational Screen* 10: 169-71; June, 1931.

tation. Those classes in which pupils had discussion during the film presentation did not do as well as their control groups. The procedure of having the teacher lecture during the showing of the film tended to clinch the facts which he mentioned but hindered the pupils in remembering facts which followed immediately upon his lecture. The opinion was expressed that possibly if the film could be slowed down or completely stopped it might be combined with the lecture effectively. The children seemed to object to discussion and lecturing because it interfered with following the film.

WOOD AND FREEMAN [21] attempted to determine the contribution made by twenty teaching films to the regular classroom work. Classes in which the films were a regular part of the instruction were compared with classes which did not have the advantage of this device. Almost 11,000 children were used in the experiment. In the fields of geography and general science the instruction was from February to May. Both objective and essay tests were used to measure achievement. The statistical evidence from the experiment showed that the experimental groups gained more than those that were taught by the usual method. This was true in both the objective and the essay tests. Questionnaires circulated among the teachers revealed an overwhelming opinion to the effect that the films were highly effective in arousing interest and improving the project work, classroom discussion, and writing.

CHARTERS [22] and others have recently completed a number of investigations of the influence of motion pictures upon youth. Studies were made of the number of children attending the movies, the influence of pictures upon sleep, the gains in general information, and the nature of the content of current motion pictures. Three general conclusions of the entire investigation were: (1) the motion picture is a potent medium of education; (2) the content of current pictures is not good for children because of the emphasis upon sex, love, and crime; and (3) the motion picture situation is complicated by the influence not of the school, but of the home, the church, community customs, and street life. For further details of particular significance to school practises one should consult the detailed reports listed in the reference given in footnote 22.

[21] Wood, Ben D. and Freeman, Frank N. *Motion Pictures in the Classroom.* Boston: Houghton Mifflin Co., 1929. 392 p.

[22] Charters, W. W. and others. *Motion Pictures and Youth; A Summary.* New York: Macmillan Co., 1933. 66 p.

MOTION PICTURES COMPARED WITH OTHER AIDS

ARNSPIGER [23] attempted to compare the effectiveness of sound pictures in general science and music with the usual methods of classroom instruction. The pupils in the experiment were in the fifth and seventh grades. Control groups of about equal ability were taught by the usual methods. The pupils in the experimental groups were given three showings of each sound picture during the course of each unit. Objective tests were used to measure progress. In the pre-test the control groups showed slightly higher achievement than the experimental groups. Each unit of work was taught for two weeks and was followed immediately with a comprehensive test. Four weeks after the experiment was concluded there was still another test. From the results the author concluded that those youngsters taught by the use of sound pictures made greater gains than those who were taught by the usual methods. These gains were statistically significant as shown by the critical ratios. The data also showed that talking pictures make distinct contributions to the learning of pupils who are below as well as those who are above average intelligence.

FREEMAN [24] and others studied the relative effectiveness of presenting printed matter, charts, and maps by motion pictures, by lecture, and by individual study. The film used in the study presented facts about the railroads in the United States. Three separate experiments were made utilizing pupils of the fifth to eighth grades as subjects. Comparisons were made between the film and oral lecture, the film and a reading lesson, the film with the charts eliminated and presented separately on large pieces of cardboard, and other combinations of the same basic materials. The general conclusion was that there was no advantage in presenting maps, tables, and charts by means of motion pictures. The oral lecture, accompanied by maps and charts, was superior both in effectiveness and convenience in conveying information in more or less general and abstract form.

FREEMAN [25] and others investigated the possibilities of improving the positions of children in penmanship thru the use of motion

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[23] Arnspiger, Varney C. *Measuring the Effectiveness of Sound Pictures as Teaching Aids.* Contributions to Education, No. 565. New York: Teachers College, Columbia University, 1933. 156 p.

[24] Freeman, Frank N., Reeder, E. H., and Thomas, Jean A. "An Experiment To Study the Effectiveness of a Motion Picture Film which Consists Largely of Tables, Maps, and Charts, as a Means of Teaching Facts or Giving Abstract Information." *Visual Education; A Comparative Study of Motion Pictures and Other Methods of Instruction.* Chicago: University of Chicago Press, 1924. p. 258-74.

[25] Freeman, Frank N., Shaw, Lena A., and Walker, D. E. "The Use of a Motion Picture Film To Teach Position and Penholding in Handwriting." *Visual Education; A Comparative Study of Motion Pictures and Other Methods of Instruction.* Chicago: University of Chicago Press, 1924. p. 282-309.

picture films. Children of the upper grades of elementary schools were chosen as subjects. Experimental centers were set up in Detroit and Evanston. One group of pupils was taught by the regular handwriting procedure, another group was taught by the regular procedure plus the comparison of scores on tests, while the third group was shown the handwriting film three times and then taught by the regular procedure. The general conclusion was that those pupils shown the film made markedly greater gains in position than did the groups receiving other types of instruction.

GIBBS [26] used health materials in trying to determine the efficiency of instruction by motion pictures in regard to economy of time. Pupils in the seventh grades of three cities were subjects in the experiment. They were divided into three groups for the purpose of the experiment and each of these groups was divided again on the basis of mentality. The first group studied the process of digestion by the usual textbook and recitation method for five consecutive periods. The second group studied the subject by the usual textbook and recitation method for two consecutive periods, followed on the next day by a motion picture. The third group had only one period for textbook and recitations followed on the next day by a motion picture. Tests were given immediately after the experiment and one month later. The results of the experiment showed that altho the second group had only 55 percent as much time for instruction, they made on the average a higher score than those taught solely by recitation and textbook. The third group taught by one recitation and one presentation of the film scored only a little below the other two groups. In other words by combining the motion picture film with the textbook and recitation method the same average score can be obtained by devoting less time to the subject. The test given one month after the experiment showed that on the average the groups exposed to the motion picture remembered more facts and with greater accuracy than those who had been taught by the textbook method alone.

LACY [27] compared the efficiency of three typical methods of presenting a story to pupils. The three methods were: first, silent reading of a story by the pupils; second, oral telling of the story to the pupils; and third, presentation of the story by means of motion pictures. The investigator was interested in determining which method

[26] Gibbs, David. "An Experiment as to Economy of Time in Instruction by Use of Motion Pictures." *Educational Screen* 4: 520-26; November, 1925.
[27] Lacy, John V. "The Relative Value of Motion Pictures as an Educational Agency." *Teachers College Record* 20: 452-65; November, 1919.

was most interesting to the pupils, which one stimulated the most thinking, which method led to improvement in moral discriminations, and which one led to a retention of the greatest number of facts. The subjects of the experiment were 315 boys in grades seven to nine. Twelve classes were divided into four experimental units with three classes in each group. The rotation method was used in the experiment. That is to say, each of the three groups was subjected to a different method at any given time, but all groups were subjected to all methods eventually. Tests were given immediately after each presentation and again three weeks after the experiment. The author concluded that under the conditions of the experiment, questions of fact, inference, and moral discrimination can be answered more adequately when the narrative material has been presented by a story-teller or as reading matter. The most successful method was by story-telling. The same held true even three weeks later. So far as interest was concerned the pupils voted for the motion picture first, reading second, and story-telling third. Apparently the order of the various methods, according to interest, is exactly the opposite of the order if the ability to reproduce and apply the material presented is considered.

McCLUSKY [28] made a series of fourteen experiments, chiefly in the fields of history and geography, to determine the effectiveness of various methods of instruction. A total of 649 pupils participated from grades four thru eight. The basic device in each case was the silent motion picture. Variations in procedure involved the introduction of discussion or oral methods either before or following the films, the use of supplementary classroom maps, the utilization of stereopticon pictures, the use of blackboard sketches, and various other aids. A rather complete summary of the findings will give further details as to the combinations of devices which were utilized:

(1) Oral instruction illustrated by maps followed by pure film instruction is more effective than pure film instruction.

(2) The oral discussion read before the film on the Panama Canal was not as effective as a single showing of the film itself or as a stereopticon lecture.

(3) A stereopticon lecture followed by film instruction is more effective than two showings of the same film.

(4) Place sequence is taught more effectively by teacher-chart instruction than by film instruction.

(5) An analysis of test papers on the film "Waste Disposal in Cities" shows that the film needs elaboration and explanation at various points to make it as effective as oral-chart instruction either in teaching a place sequence or in presenting a picture for analytical study.

[28] McClusky, F. Dean. "Comparisons of Different Methods of Visual Instruction." *Visual Education; A Comparative Study of Motion Pictures and Other Methods of Instruction.* (Frank N. Freeman, editor). Chicago: University of Chicago Press, 1924. p. 83-166.

(6) Pupils living in an inland city can be taught to understand how the tide goes out to sea more effectively by motion pictures than by oral instruction.

(7) It is more effective to give verbal explanation during the showing of a film than to present the film without comment.

(8) Films containing a high percentage of action pictures are more effective than still pictures for presenting certain types of material and approach the teacher situation in effectiveness.

(9) Language is a necessary accompaniment of concrete experience.

(10) The motion picture films herein described are inflexible units which lack the flexibility of the teacher-language-chart situation. This can be remedied in part by stopping the film for comment or by explanatory material given during the projection of the film.

(11) The film groups suffered a lower percentage of loss in the memory tests than groups which were given other methods of presentation, with one exception—when the film was compared with the slide.

(12) The attention of the pupils to the presentation of a moving picture film is not appreciably higher than to the teacher-chart situation.

McCLUSKY [29] compared six modes of presentation of the subjectmatter in a film on the iron and steel industry and one on lumbering. The six methods were: (1) the film unaccompanied by oral instruction, (2) the film accompanied by oral instruction during the showing of the film, (3) the slide with subtitles unaccompanied by oral instruction, (4) the slide with subtitles accompanied by oral instruction, (5) photographic prints without oral instruction, and (6) photographs with oral instructions. Comparable groups of pupils in the fifth to eighth grades made up the subjects. Each lesson began with a four-minute period during which the teacher asked questions to arouse interest and then followed with one of the six special types of presentations. Tests called for imagery, identification, and sorting of materials. The results were inconsistent but several conclusions seemed to be warranted: first, the oral instruction always added to the effectiveness of the lesson; second, the film was generally slightly superior to the mounted photographic print; third, the differences between film and slide lessons were not particularly favorable to either one; and fourth, the differences between slides and photographic print presentations were inconclusive.

McCLUSKY [30] compared motion pictures with slides, stereographs, and demonstration as a means of teaching how to make a reed mat and a pasteboard box. Pupils in the fourth, fifth, and sixth grades

[29] McClusky, F. D. and McClusky, H. Y. "Comparison of Six Modes of Presentation of the Subject-Matter Contained in a Film on the Iron and Steel Industry and One on Lumbering in the North Woods." *Visual Education; A Comparative Study of Motion Pictures and Other Methods of Instruction.* (Frank N. Freeman, editor). Chicago: University of Chicago Press, 1924. p. 229-57.

[30] McClusky, F. D. and McClusky, H. Y. "Comparison of Motion Pictures, Slides, Stereographs, and Demonstration as a Means of Teaching How to Make a Reed Mat and a Pasteboard Box." *Visual Education; A Comparative Study of Motion Pictures and Other Methods of Instruction.* (Frank N. Freeman, editor). Chicago: University of Chicago Press, 1924. p. 310-84.

were matched for age and grade. After a period of instruction the time of each pupil in making an article was recorded and the finished product was rated as to its accuracy. The demonstration procedure proved superior both in the case of the construction of the reed mat and the box. This superiority appeared to be due to the presence of the teacher and the fact that the pupils could see a real box or mat actually constructed. Pupils of both the demonstration and the stereograph groups made fewer errors than those instructed by other means. The stereograph appeared to help because of the three-dimensional effect given to flat pictures.

MEAD [31] attempted to obtain data as to the relative merits of a taught lesson, a film lesson, and a taught and film lesson. The experiment involved 108 pupils in the third, fourth, fifth, and sixth grades. The same pupils were taught by all three methods. In the film lesson children simply sat in the auditorium and viewed the film without any comment or suggestions. The period was fifteen minutes long. In the taught lesson the procedure was simply the question and answer oral recitation without any visual aids, time thirty minutes. In the taught and film recitation there were ten minutes in the classroom previous to the showing of the film, and ten minutes given to reading, questioning, and preparing for the film presentation. Following the film the class returned for ten minutes discussion. The combination of the taught lesson and the film seemed to be best. The film alone was four times out of seven better than the usual taught lesson.

RULON [32] attempted to measure the educational effectiveness of the sound motion picture in the teaching of general science in the ninth grade. The material was presented to students in two different ways. One method was simply the textbook presentation. The other used the textbook and the films. A third group of children was employed in the experiment for measurement purposes. The children did not receive any instruction and their scores were considered as zero in respect to instruction. A total of 2860 children was used in the three groups. Practically all of the children were organized under the junior high-school plan. The three groups were rather evenly balanced as to mental ability, previous general science achievement, and chronological age. The author concluded that the teaching technic employing the motion picture film was 20 percent more effective

[31] Mead, Cyrus D. "Visual vs. Teaching Method—An Experiment." *Educational Administration and Supervision* 13: 505-18; November, 1927.

[32] Rulon, Phillip J. *The Sound Pictures in Science Teaching.* Harvard Studies in Education, Vol. 20. Cambridge, Mass.: Harvard University Press, 1933. 236 p.

from the instruction standpoint than the usual unaided presentation. Tests given three and one-half months after the experiment showed that the film group retained 38 percent more than those taught by the usual method.

SKINNER AND RICH [33] attempted to determine the effectiveness of teaching with the textbook alone; second, teaching by means of textbook plus stereographs and lantern slides; and third, teaching with all of these devices plus motion pictures. The pupils in the experiment were in the seventh grade. Insofar as possible conditions of instruction were kept constant. Objective tests were used to measure progress. A questionnaire was circulated among both the teacher and the pupils to determine interest. The experiment continued for ten teaching periods of forty minutes each. Another test was given two months after the completion of the experiment. From the data the author concluded that the slide and film classes made more progress than those taught by the textbook method. This conclusion was not based upon clean-cut evidence as some of the textbook classes made more progress than the slide classes. The amount of retention two months later seemed to be higher in those classes that had been subjected to the visual instruction. The teacher believed that the pupils taught by visual aids were more interested in the work and easier to handle. The stereographs were considered the least useful type of visual aid. The pupils agreed with their teachers as to the growing interest from the use of visual aids.

WEBER [34] measured the effectiveness of several methods of instruction. These methods were as follows: first, the study of a printed lesson; second, the same lesson presented orally by the teacher; third, the lesson depicted by film; and fourth, the film presentation accompanied by explanatory comments. The subjects were six hundred seventh-grade pupils. Objective tests were used to measure the progress the pupils made. The lowest average scores were obtained by those taught by the teacher method. Those who studied alone were next, those who were instructed by the film were next, and the highest score was made by those who were instructed by the combination film and lecture.

WILSTE [35] compared the effectiveness of the text and the oral recitation with a method using a film in addition to the oral and text

[33] Skinner, Charles E. and Rich, Stephen G. "Visual Aids in Geography: An Experiment." *Elementary School Journal* 25: 700-705; May, 1925.

[34] Weber, Joseph J. *Comparativeness of Some Visual Aids in Seventh Grade Instruction.* Chicago: Educational Screen, Inc., 1922. 131 p.

[35] Wilste, N. G. "Using a Motion Picture Lesson in Combination with Text and Oral Instruction, by Way of Review." *Visual Education Magazine* 4: 107; April, 1923.

recitation. The film was on the subject of "Magnetism." The sixty pupils examined were in the eighth-grade science classes of the junior high school. The oral and text recitation method required one hour of time. The class seeing the film required fifteen minutes additional time. As a result of this one lesson the film group showed a resulting test score 5 percent higher than the class taught by the textbook and oral recitation method only. From this the author concluded that the practise of combining films with the usual recitation is a good thing.

YOUNG [36] attempted to ascertain the value of moving pictures in teaching agriculture. The pupils were enrolled in the sixth, eighth, and ninth grades. Each grade was divided into two groups of equal ability on the basis of teacher estimates and intelligence tests. One of these groups was viewing the films at the time that the other group was in the classroom studying in the usual way. During the running of the film the teacher made brief comments calling attention to the essential facts and principles. The film period was about five or ten minutes shorter than the period for those who used the textbook and lecture methods. All groups were given the same tests. The author concluded that instruction with the aid of moving pictures was superior to the usual teaching methods.

RADIO

WISCONSIN RESEARCH COMMITTEE [37] made a study of the progress of pupils in current events. They used twenty-five control schools and twenty-five experimental schools. Both groups were supplied with a well-known current events magazine. In the control schools the children studied and recited on the materials in the magazine. In the experimental schools the magazine study was supplemented by radio lessons on current events. Both groups gave the same amount of time to the study. The radio lessons were given for a period of several weeks. The progress of the children was measured at the end of four and one-half weeks by means of one hundred true-false statements. Another test was given at the end of the experiment. On the total scores on the first examination the radio group exceeded the scores of the control group. The critical ratio of the difference was 2.47 which means that it holds in 9500 cases out of 10,000. The test at the end of the experiment gave similar results. The authors

[36] Young, A. L. "Teaching With Motion Pictures." *Peabody Journal of Education* 3: 321-26; May, 1926.

[37] Wisconsin University, Research Committee. "Wisconsin Tests Value of Radio in the Classroom." *School Life* 16: 104-105; February, 1931.

concluded that the radio lessons taught current events topics somewhat better than they were taught by the teacher without the aid of the radio.

A study was also made of music lessons by radio. Schools in the control groups did not have uniform music instruction during the course of the experiment. Some of the schools had little or no instruction. They were taken, however, as a regular school situation. The radio music lessons consisted of four parts: (1) information about music, (2) some music played without comment, (3) rhythm exercises in which the radio listeners participated, and (4) the teaching of singing. The results were tested by asking each school in the experiment to make a scrapbook of musical information, and by having a professor of music judge subjectively the effectiveness of the teaching of rhythmic exercises and songs. A musical information test was also used. The scores made by the experimental group of pupils indicated statistically that their gains were real and not accidental. The scores of the experimental group were higher than those of the control group. This difference was statistically significant.

HARRISON [38] attempted to measure the effect of radio programs in rural schools. The specific purpose was to determine whether or not children in rural schools can gain musical information thru radio listening. A test was constructed, based upon the Damrosch program. A test was given first before the broadcast in the third thru the eighth grades in two groups of schools. At the conclusion of the concerts the test was given again with the same children. Approximately 1200 children were involved in the study. In grades five, six, seven, and eight the experimental classes gained more in musical information than did the pupils in the control classes. This difference was found to be statistically reliable. However, in the third and fourth grades the children in the experimental groups did not gain as much as the children who had not listened to the concerts. Other questions were asked the children with the following results:

(1) The majority of children in both the experimental and control groups would rather listen to the radio than sing.
(2) The majority of children in both groups would rather listen to the radio than the phonograph.
(3) The majority of the children in both groups would rather listen to music that is played than music that is sung.
(4) The majority of children in both groups would rather listen to music in the evenings than to read (the only exception to this was in the eighth grade of the control group).

[38] Harrison, Margaret. "Measures of the Effects of Radio Programs in Rural Schools." *Education on the Air.* Third Yearbook of the Institute for Education by Radio. Columbus, Ohio: Ohio State University, 1932. p. 245-60.

(5) The majority of children in both groups would rather play an instrument than listen to the radio (the exception was the third grade of the experimental group).

A further study was made to determine which group would gain the most: one in which the children listened to a half-hour radio program without preparation or follow up; and one in which they listened to a half-hour program, followed by a half-hour of instruction; and a control group which studied the same material for an hour. The subjects in the experiment were in the sixth, seventh, and eighth grades. The difference between the progress of the two groups, altho not large, was so statistically significant as to hold for eighty-six chances in one hundred in favor of the experimental group.

MISCELLANEOUS METHODS AND DEVICES

Preceding paragraphs of this chapter have set forth attempts to discover and to appraise the effective uses of various devices. This summary has aimed to include studies which have examined such devices as flat pictures, lantern slides, and silent motion picture films under conditions more or less isolated from elaborate teacher technics. The whole field, however, shades off into one including intangible or mental devices such as questions, projects, problems, units, and other aids which are often called "methods." Combinations of various "devices" and "methods," in reality, teacher technics or classroom procedures, are often looked upon as unitary devices or aids to teaching.

Into this whole field of "methods," which in common practise overlaps with that of devices, the present chapter has not intentionally ventured. The need for summaries in the field has been met, in part at least, by two issues of the *Review of Educational Research:* (1) "Special Methods in the Elementary School," October 1931, 80 p.; and (2) "Psychology of Learning, General Methods of Teaching and Supervision," October 1933, 90 p.[39]

A FEW GENERAL CONCLUSIONS

Altho some of the research reported above has been made since Freeman's extensive studies of various aids to teaching, his conclusions represent rather well the present points of general agreement:

(1) The relative effectiveness of verbal instruction as contrasted with the various forms of concrete experience represented in visual education, depends on two major conditions: the nature of the instruction to be given, and the

[39] Published by the American Educational Research Association, a department of the National Education Association, and available at 1201 Sixteenth St., N. W., Washington, D. C.

character of the pupils' previous acquaintance with the objects which are dealt with in the instruction.

(2) The comparison of the motion picture film with other visual aids—slides, stereographs, still pictures—as means of informational instruction, indicates that the motion picture is superior within a restricted range of subjects, and that outside this range the older devices are as effective or more effective than motion pictures.

(3) In teaching how to do or make something, *demonstration*, where it can be advantageously carried out, is superior to the film, but the film is superior to the methods with which it was compared, except demonstration.

(4) It does not appear that motion pictures are of outstanding and unparalleled value as means of awakening interest in a subject or of stimulating activity in comparison with advanced modern methods of instruction.

(5) The peculiar value of the film lies in its ability to furnish a peculiar type of content of experience rather than in its generally stimulating effect.

(6) Each of the common forms of instruction which employ visual aid has some advantages, and there are circumstances under which it is the best form to use.

(7) The usefulness of motion pictures would be enhanced if they were so organized as to confine themselves to their peculiar province. Their province seems to be the exhibition of moving objects and particularly to facilitate analysis of motion. They are outside their province when they show still objects or when they enter the field of abstract verbal discussion.

(8) The superior effectiveness of the teacher as contrasted with any material device was indicated repeatedly in the investigation.

(9) Music accompanying a motion picture film appears to heighten the attention, but whether it increases the amount of information is not certain.

(10) There was a smaller percentage of loss on the memory tests in the case of the film groups than of the groups which were given other methods of presentation, with one exception.

(11) Subjectmatter should not be included in educational films which is not primarily the representation of motion or action.

(12) Motion pictures should be so designed as to furnish to the teacher otherwise inaccessible raw material of instruction, but should leave the organization of the complete teaching unit largely to the teacher.

(13) It is probably desirable to have motion picture films in small units.

(14) Caution should be observed to encourage initiative and an intellectually active attitude, and not to allow the use of motion pictures or other visual materials to overdevelop the attitude of passive receptivity.[40]

Some general conclusions, based upon a critical and experimental appraisal of a number of "methods," have been made by Gates. He contends, other things being equal:

(1) That the method is most acceptable which most effectively conserves the teacher's time for the most fruitful types of guidance.

(2) That method is most acceptable that sets up situations which, in and of themselves, enable the pupil to acquire the desired reaction—skill, understanding, idea, and emotional adjustment.

(3) That method is best which tends of itself to produce the optimum or desired degree of proficiency.

(4) Favor that method which makes the greatest appeal to children's interests.

(5) Favor that program which yields the richest concomitant learnings.

(6) Favor that method which is most adjustable to individual differences.

(7) Favor that program which provides the most adequate adjustment to the level of emotions, urge, outlook, learning capacity, and intellectual capacity of

[40] Freeman, Frank N. editor. *Op. cit.*, p. 69-80.

the pupils at a given time and which keeps pace with developmental changes in these respects.

(8) Favor that program which is systematically developmental.

(9) That program is superior which most effectively incorporates various mechanical features of organization proved experimentally to be of value.

(10) That program is most desirable which enables the pupil to master the technics of self-education.[41]

The Editorial Committe believes that the above review will have been worthwhile when principals: (1) utilize the foregoing conclusions to improve instruction within their schools; and (2) utilize the research technics to appraise the methods and devices employed under their direction.

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[41] Gates, Arthur I. *Experimental and Critical Appraisals of Certain Progressive Methods in Education.* Bulletin of the School of Education. Indiana University, Vol. 9, No. 1. Bloomington, Ind.: Bureau of Cooperative Research, the University, September, 1932. p. 37-48.

RADIO IS A NEW FORCE which science has placed in the hands of civilization. Its potential uses are so numerous and varied that it has captivated the imagination of the entire civilized world. As a means of diffusing entertainment and information over wide areas, broadcasting has no peer. Steadily it is breaking down the barriers of isolation, broadening the horizons, and enriching the lives of countless millions of people. Within a dozen years radio broadcasting has become an important social factor in nearly every country in the world.—Koon, Cline M., *The Art of Teaching by Radio*, 1933, p. 1.

CHAPTER XI

SOURCES OF AIDS

EDITORIAL COMMENT

DURING the World War propaganda of every type was circulated by the governments of all nations. Millions of dollars were spent in the United States to influence the attitude of the American people. The peace-time efforts of groups to influence public opinion are also well organized. Business and industry attempt to develop attitudes which will increase sales. Patriotic societies sponsor contests. Charity and welfare groups conduct drives for funds. All of these agencies bring pressure to bear to have their programs adopted and carried on by the schools. Since many of these propaganda and advertising campaigns contain socially approved elements the teacher is often seriously perplexed.

The articles in this chapter offer a partial solution to the dilemma. The first contributor suggests that the school should not attempt to isolate itself from " pressure groups," but at the same time the principal is responsible for the protection of children from exploitation. The second article gives a splendid survey of the aids available from such public sources as state museums, state libraries, state universities, and the departments of the federal government. Another contribution reveals some of the commercial sources of pictures which are not usually known to the typical teacher. The final article summarizes some of the available sources of aids and cites several useful lists of commercial aids.

While recognizing the validity of the caution that the principal must avoid exploitation by selfish groups, there remains the fact that the activities of " pressure groups " offer an excellent instructional opportunity. Schools have some responsibility for developing citizens who are intelligent consumers. By laboratory tests in science classes the teacher can show that the claims of advertising are often exaggerated. In social science classes the programs of various so-called civic and patriotic groups may be subjected to searching examination. In hundreds of ways the teacher can use the materials common to life outside of schools to develop in pupils the habit of critical thinking.

Since the references cited in the text of the articles and in the footnotes are rather extensive, no list of selected references has been appended to the chapter.—*Editorial Committee.*

ADVERTISING IN THE CLASSROOM

SAMUEL BERMAN
Principal, J. R. Ludlow School, Philadelphia, Pennsylvania

IF BARNUM WAS RIGHT about the American public, then *100,000,000 Guinea Pigs* cannot be wrong.[1] The authors have awakened consumers to a realization of the dangers to which all are exposed by unscrupulous food and drug manufacturers; they have named each offending product, or if you will, they have called a spade a spade. As yet, the writers have not been sued for libel.

Similarly the American Medical Association has protected the public for many years by exposing fradulent products and by approving only those preparations conforming to well-established standards. Likewise, the Council on Dental Therapeutics of the American Dental Association and the several research agencies and testing institutes connected with universities, newspapers, magazines, governmental bureaus, and business houses continue to safeguard the purchaser. However, in spite of all this labor, the consumer needs to be wary.[2]

To this complex problem the elementary-school principal must bring the force of his administrative and supervisory leadership. He must distinguish between desirable and undesirable advertising as aids to teaching in the classroom; he must establish a definite policy concerning pictures, photographs, posters, and charts that are distributed so generously by advertisers; he must refuse to allow his school to become a commercial base for the distribution of samples of cereals, soaps, toothpastes, or antiseptics. The principal must realize that the ultimate aim of the commercial advertiser, even tho a genuine service is being rendered, is profit. In short, he must assume that no matter how valuable free, illustrative materials from advertisers may be, the school child is not getting "something for nothing."

Desirable and undesirable advertising—From the point of view of aids in teaching, all illustrative materials, particularly pictures and objects helpful in the learning process, are desirable. Their chief limitation concerns the presence of a specific, trade-marked label or the name of a manufacturer on the material used. It is the opinion of the writer that such names constitute a form of undesirable advertising; that competing firms may justly complain of discrimination towards their materials when those of a competitor are used; and

[1] Kallet, Arthur and Schlink, F. J. *100,000,000 Guinea Pigs.* New York: Vanguard Press, Inc., 1933. 312 p.
[2] Price, Ray G. "Education of the Consumer." *Journal of the National Education Association* 22: 258-59; December, 1933.

that, further, impressionable youngsters may be influenced subtly, tho unintentionally, to become consumers of special commercial products.

As an instance of this, take the valuable exercise of preparing food pictures illustrative of a balanced diet for different meals or a poster of foods under the headings of proteins, carbohydrates, or fats. The pupils are asked to cut out appropriate pictures from magazines and newspapers. Invariably they will bring in pictures of baked beans, cereals, soups, desserts, fruits, meats, butter, and bread—all labeled with competing producers' names, unless the teacher has cautioned the class to cut out the trade names or cover them with crayon, water color, or a piece of paper. It may be claimed that such a procedure directs attention to something which otherwise would be ignored, but, on the other hand, such foresight frees the school from the charge of permitting commercial advertising.

Another example of the same situation can be found in the activities growing out of "Keeping Shop," "The Grocery Store," or "The Market." Shelves in the classroom are stocked with cartons, canned goods, and packages. This practise, of course, gives reality to the program and simulates a life-situation. Nevertheless, it is the opinion of the writer that all material of this kind should be re-labeled to exclude the special trade-mark or the name of the manufacturer. Thus, articles on the shelves would appear simply as tomato soup, baked beans, peas, or granulated sugar, as the case may be. Experience has shown no loss of interest on the part of the pupils.

Desirable advertising matter comes from a few national organizations. They recommend no special brand or company, but extol the virtues of a general product such as milk, cheese, butter, bananas, or bread. Such organizations furnish schools with reasonable quantities of posters, pamphlets, blotters, and pictures for coloring, free from direct local advertising. There can be no real objection to national advertising of this type. In fact, the material so furnished is invaluable to the teaching process.

Propaganda and advertising—The principal must choose wisely from the illustrative material available. He must distinguish not only between desirable and undesirable advertising, but also between desirable propaganda and undesirable propaganda, for the difference between advertising and propaganda is sometimes but a hair's breadth.

In its broadest sense desirable propaganda is desirable advertising; for example, many pictures and illustrative materials used in connection with Pan American Day, World Goodwill Day, and Child Health Day are of high value, as are the materials used for American

Education Week, Book Week, Fire Prevention Week, Music Week, and Clean-up Week. The principal should fully support the classroom activities of organizations sponsoring such worthwhile days or weeks.

However, the principal needs to be reminded again and again to resist the pleas of many organizations which seek to foist upon schools such profit-making projects as "Candy Week," "Apple Week," and similar commercial stunts *ad nauseam*. The *Providence Journal* as far back as 1928 printed this caustic comment:

> Most special days and weeks are sheer propaganda, much of it pure commercialism. Over-observance has lessened respect for the occasions really worthy of observance. In the glaring absurdity of Babbittism, a "mind-your-own-business week" might profitably be applied to the adult world as well as to the schools.

The principal, too, must weigh the usefulness of the flood of free publications and teaching aids coming from non-school organizations that attempt to train childhood and youth in civic virtues.[3] He would do well to look upon all propaganda with a critical eye and learn to sift the good from the bad.[4] It is important to note that a recent yearbook of our own Department included the report of a survey which included suggestions on how to prevent outside "pressure groups" from exerting undue influences on the schools.[5]

The foregoing cautions do not mean that all outside aid should be rejected. Usually, the principal will make no mistake, if he allies himself with the outstanding groups that advocate safety, kindness to animals, peace, health, and character.[6] When these outside agencies behave as "pressure groups" the principal will usually find that public opinion can be brought in defense thru a constructive program of public relations.[7]

Direction to pupils—A supplementary suggestion concerns pupil requests for foreign travel leaflets and circulars. The superintendent of a large city system issued the following notice recently:

> We have called the attention of principals in the past to complaints which we have received from time to time from tourist agencies, railroad companies, and the like, to the effect that school pupils have sometimes been encouraged by their teachers to call or send for printed material which might be useful in relation to their school work. The large number of such requests have in the

[3] Pierce, Bessie L. *Citizens' Organizations and the Civic Training of Youth*. New York: Charles Scribner's Sons, 1933. 428 p.

[4] Parker, Howard L. "A Plan for Sifting Propaganda in the Schools." *Elementary School Journal* 33: 277-82; December, 1932.

[5] National Education Association, Department of Elementary School Principals. "A National Survey of School-Community Contacts." *The Principal and His Community*. Eleventh Yearbook. Washington, D. C.: the Association, 1932. p. 163-93.

[6] For further suggestions see the *Report of the Committee on Propaganda in the Schools*, National Education Association, 1929, 47 p. and Chapter XV in *Character Education*, Department of Superintendence, 1932, p. 333-44.

[7] A study of pressure groups which contains many helpful suggestions has been prepared by Waller, J. Flint. *Outside Demands and Pressures on the Public Schools*. Contributions to Education, No. 542. New York: Teachers College, Columbia University, 1932. 151 p.

past constituted an annoyance, and we consequently felt obliged to request principals and teachers to discourage this form of activity on the part of school pupils.

Pupils, of course, should be directed to cut pictures and other illustrative material for geography and other subjects from rotogravure supplements, magazines, and newspapers. They should be cautioned also to avoid mutilation of valuable books and pamphlets. Often facsimile drawings or line sketches make the work more interesting.

Summary—As the head of his school, the principal should be responsible for the type of advertising material used as teaching aids in the classroom. By way of summary, he should:

(1) Remember that the ultimate aim of the advertiser is profit; that there is really no such thing as "getting something for nothing" in advertising.

(2) Refuse to permit his school to become a commercial base for the distribution of samples.

(3) Have all advertising trade-marks and manufacturers' names covered or relabeled to avoid influencing the pupil in favor of certain brands and to free the school from the charge of permitting special commercial advertising.

(4) Avoid undesirable propaganda as he does undesirable advertising. Avoid the multiplicity of "days and weeks" sponsored by self-seeking commercial groups and the materials that go with them.

(5) Weigh the usefulness of all illustrative material, especially from "pressure groups," and accept such material *only when ethical,* no matter how useful in the teaching process.

(6) Direct teachers to minimize requests by pupils for circular material not originally intended for pupils.

(7) Remember that as administrative and supervisory leader, the principal can wield a direct influence to the end that nowhere will unethical advertising or subversive propaganda be found as teaching aids in any classroom.

GOVERNMENTAL AGENCIES SUPPLYING VISUAL AIDS

EDITH A. LATHROP
Associate Specialist in School Libraries, U. S. Office of Education, Washington, D. C.

YOU AND YOUR GOVERNMENT—this is a familiar subject for discussion these days. Not much is said about how the federal government can help you teach a better school, yet for those who will seek it there is available on this subject a wealth of material that may be borrowed or purchased for nominal sums. Some may be had for the asking. Of this material none are more welcome to progressive teachers than pictures, charts, maps, posters, photographs, exhibits, lantern slides, film strips, and moving picture films. It is often difficult for teachers to know the sources of helps of this character, particularly if they teach in school systems that do not maintain departments of visual instruction. Such helps may sometimes be secured from local as well as from state and federal governments. Much could be written about the visual materials supplied schools by libraries and museums in municipalities and by county libraries, but this discussion is limited to state and federal government agencies.

STATE EDUCATIONAL AND LIBRARY AGENCIES

It is always best to seek first the help of one's own state.[1] Find out what your state has, then see what the national government can furnish that the state cannot. The principal state agencies from which visual aids may be procured are institutions of higher learning, departments of education, state libraries, state museums, and other departments such as agriculture, health, and highways.

Most state institutions of higher learning lend visual aids—Visual instruction service is a feature of the extension work of most state-supported institutions of higher learning. This service includes loans of visual materials to schools and other community organizations. The expense involved is nominal; usually the exhibitors must pay carrying charges. A few institutions including the universities of Indiana, Iowa, Kansas, South Dakota, Virginia, and Wisconsin furnish catalogs or circulars listing the aids available for loans. Brief descriptions of this service in the universities of Iowa and Kansas, two institutions that have made considerable advancement in this field, are given herewith.

[1] It is suggested that each principal should be familiar with the services in his district extended by public and private libraries, museums, art centers, and similar agencies.

The visual instruction division of the University of Iowa has available for loans an art exhibit of thirty famous pictures, exhibits of drawings, paintings, and designs; also slides and moving picture films, including a few talking films. Moving picture projectors may also be rented from the division.[2]

The bureau of visual instruction of the University of Kansas furnishes at minimum cost motion picture films, glass slides, still films, film slides and microscopic slides. The motion picture service includes 500 reels of 16 mm. subjects. Still pictures comprise about 8000 glass slides, 2500 still films and 21,000 film slides. The glass and film slide sets and the majority of the strictly educational motion pictures are accompanied by teachers' manuals. A demonstration room equipped with all types of projection equipment and cross-indexed sets of slides and stereographs is available for the inspection of anyone who may care to see the various types of projectors in operation.[3]

Departments of education sources of help—Supplying visual aids to schools is a service of departments of education in some states. This activity is carried on either thru divisions created especially to foster visual instruction or thru state libraries which function as divisions of state departments of education. New York and Pennsylvania are pioneers in this field.

The visual instruction division of the New York State Department of Education lends to schools prints, wall pictures, and lantern slides, and prepares and distributes publications relating to the service. There is a great demand for lantern slides, particularly among elementary schools in the cities, and there is also a gratifying increase in the requests from rural schools. Approximately one-half of the slides are colored. They are available for history, art, geography, nature study, health, and other subjects. Recently the attention of the division has been concentrated upon developing slides in geography that will conform to the new syllabus in that subject. There is a growing tendency to use visual aids in the lower elementary grades. The Department feels that the value of its program lies in the stimulus that it gives teachers, for the use of screen pictures is likely to become ineffective in schools in which teachers lack the guidance made possible by a central agency.[4]

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[2] Iowa State University. *Visual Aids.* Extension Bulletin, No. 324. Iowa City: the University, September 15, 1933. 15 p.

[3] Kansas State University. *Annual Catalog, 1933-34.* Lawrence, Kans.: Bureau of Visual Instruction, 1933. p. 131.

[4] New York State Department of Education, Visual Instruction Division. *Reports, 1930-31.* Albany: University of the State of New York, 1932. Vol. 1, p. 161-69. (See also reports for each school year back to 1910-11.)

The chief visual education activities of the Pennsylvania State Department of Education consist in making available for school officials and teachers, publications on visual and other sensory aids in lending slides and specimen cabinets and in stimulating training for teachers in visual technics. The work is in charge of the director of the state museum and the visual education division. In Pennsylvania the state museum has been consolidated with the department of education.

One of the most important visual education developments in Pennsylvania has been the introduction of courses in visual and other sensory technics in all of the state teachers colleges and in fifteen or more accredited colleges that train teachers. This development has come about thru general acceptance on the part of school people that sensory materials effectively organized are essential aids in improving the quality of classroom instruction. One outcome of this interest in visual education is an increase in the number of persons who have been made responsible for the development of visual materials in different school districts of the state.[5]

A few years ago visual instruction was made an activity of the Ohio State Department of Education. Several publications on Ohio have been printed and distributed to schools and lectures on the subject have been given to schools thruout the state. A printed list of available slides and films is furnished by the Department.[6] The division of university extension in the Massachusetts State Department of Education furnishes motion pictures, stereopticon slides, and charts to schools requesting visual materials for instruction purposes.[7]

Library extension agencies loan pictures—The extension service of practically all state libraries and library commissions that function independently of state departments of education includes the circulation of pictures among schools. For a long time these libraries have collected and classified inexpensive pictures which have been clipped from newspapers, magazines, and other publications. Some have added reproductions of master paintings, souvenir postal cards, photographs, and etchings. In addition to pictures a few libraries furnish stereoscopic views and lantern slides. A few years ago the Kentucky Library Commission loaned the state teachers college at Cape Girardeau, Missouri, an exhibit consisting of posters, pictures, and books pertaining to Kentucky for use at the annual meeting of the

[5] Pennsylvania State Department of Education, Visual Education. *Reports for the Bienniums 1928 and 1930.* Harrisburg: the Department, 1928. p. 109-11. 1930, p. 66-69.
[6] Ohio State Department of Education, Visual Instruction. *Reports, 1927-1929 and 1929-1931.* Columbus: the Department.
[7] Massachusetts Department of Education. *Report for the Year Ending November 30, 1931.* Boston: Division of University Extension, 1931. p. 50-54.

Missouri State Teachers Association.[8] The book collection of the Illinois State Library is supplemented by one of the finest picture collections of the Middlewest.[9]

The art and music department of the Michigan State Library makes a specialty of pictures. It supplies schools every year with several thousand framed and unframed pictures. The framed pictures may be borrowed for the entire school year by rural and small town schools. These pictures are sources of inspiration and enjoyment for many schools whose walls would otherwise not be adorned with good pictures. The unframed pictures are both large and small; the larger sizes are used for exhibition purposes and the smaller ones for classroom use.

Thousands of other pictures taken from magazines and the rotogravure sections of newspapers have been mounted and are available for loan. In addition the picture collection contains photographic views of cities, industries and points of scenic interest in Australia, Spain, and other foreign countries; also portraits of the leading musicians and pictures of orchestral instruments. Photographs of the various rooms of the White House and the Capitol at Washington, D. C., as well as views of historic points in Michigan, are much appreciated by the schools. The loan collection also contains silk flags of many of the countries of Europe, Asia, and Latin America, which are enjoyed by the children.[10]

FEDERAL DEPARTMENTAL AIDS

The materials supplied by the federal departments often supplement those contributed by the states. They also furnish close-up views of the government work that is carried on at the nation's capitol. By these pictures and other aids children may gain realistic impressions of the operations of their central government. Federal authorities are glad to cooperate with the schools for they realize the need for a better understanding of governmental problems.

Some of the bureaus and offices lend to schools lantern slides and other visual aids. Sometimes these aids may be purchased at reasonable rates. Financial responsibility for loans and guarantee for their proper exhibition and prompt return must be assured by borrowers; the cost involved is usually transportation for both directions. All

[8] Kentucky State Library Commission. *Eleventh Biennial Report, 1929-1931.* Frankfort: the Commission, p. 13.

[9] Illinois State Library. *Report of the Library Extension Division for January 1, 1928 to December 31, 1929.* Springfield: the Library, p. 24.

[10] Michigan State Library. *Report of the State Librarian of the State of Michigan for the Biennium Ending June 30, 1930.* Lansing: the Library, 1931. p. 14-15.

applications for films should state whether 16 or 35 mm. films are desired, for most bureaus have both widths. As the number of copies of films are usually limited, requests should be made as far as possible in advance of the dates when they are to be used.

In some instances bulletins issued by the departments furnishing visual aids are valuable supplements to the aids themselves. Two such bulletins are *Glimpses of Our National Parks* and *Glimpses of Our National Monuments.* Both may be obtained free from the Office of National Parks, Buildings, and Reservations, Department of the Interior, Washington, D. C.

Non-theatrical films and slides—Some bureaus not lending slides give information on non-theatrical films. One important source of this information is the motion picture section of the Bureau of Foreign and Domestic Commerce in the Department of Commerce. This bureau issues a monthly press release giving detailed information concerning such films.

The Bureau of Fisheries of the Department of Commerce lends lantern slides showing the propagation of fish, fishing industries, and the fur seals of the Pribilof Islands. Sets are made up to fit individual needs and are accompanied by descriptive matter.

The motion pictures of the Bureau of Mines include approximately 1,600,000 feet of film covering nearly sixty subjects. These pictures visualize the nation's great mineral industries. They tell the stories of petroleum, silver, iron, copper, lead, and many other mineral substances that constitute the foundation of our economic structure. They show where minerals are found, how they are extracted from the earth, and manufactured or refined into useful products. Several pictures deal specifically with the prevention of accidents and the protection of human life in the mining industry.

The following brief description of "The Story of Power" shows its value as an aid in teaching social science. This film contains three reels:

Reel 1 pictures the early development of the steam engine; it shows Stephenson's locomotive "The Rocket" and demonstrates modern uses of electricity, giant electro magnets, street and sign lettering, and the electric locomotive. A map indicates the distance power is transmitted from Big Creek power plant in the Sierra Nevada mountains in California. Animated drawings show how Faraday discovered that alternating current was produced by rotating a magnet between two coils of wire and how power to turn magnets is derived from steam and falling water.

Reel 2 shows Niagara Falls and compares them with the fall of water at Big Creek, more than twelve times as high as Niagara, and gives views of the plant at Big Creek and of the power plant and dam on the Mississippi River at

Keokuk, Iowa. A map shows the distribution of waterpower resources in the United States. Improvements in the steam engine are demonstrated and the operation of the steam turbine is depicted by animated drawings.

Reel 3 shows the erection of the power plant for the Edison Electric Illuminating Company of Boston and the units of power obtained per pound from coal for the years 1885 to 1925.[11]

Pictures of the Navy and the War Department—The recruiting service of the Bureau of Navigation, Navy Department, has a limited number of moving picture subjects that are available to schools located in the vicinity of the Navy recruiting stations. Information concerning loans should be addressed to the officers in charge of these stations at the following places: Birmingham, Alabama; Little Rock, Arkansas; Los Angeles, California; Denver, Colorado; New Haven, Connecticut; Washington, D. C.; Macon, Georgia; Chicago, Illinois; Indianapolis, Indiana; Council Bluffs and Des Moines, Iowa; Louisville, Kentucky; New Orleans, Louisiana; Baltimore, Maryland; Boston and Springfield, Massachusetts; Detroit, Michigan; Minneapolis, Minnesota; Kansas City and Saint Louis, Missouri; Buffalo, Brooklyn, and Troy, New York; Raleigh, North Carolina; Cincinnati and Cleveland, Ohio; Portland, Oregon; Pittsburgh, Pennsylvania; Nashville, Tennessee; Dallas and Houston, Texas; Salt Lake City, Utah; and Richmond, Virginia.

Projectors are not loaned, but arrangements can be made to have some of the recruiting officers show the pictures in schools that do not own projectors. The subjects of some of the reels are enticing. There is the *Akron Flight,* showing the first official press flight of the U. S. S. Akron over Washington, New York, and Philadelphia; *Getting in Dutch*—a visit to Holland showing canals, dykes, Dutch customs, and dances; *Under the Dragon*—a trip to China; and *The Gray Armada*—the United States Fleet in action. The subjects of the motion pictures furnished by the War Department consist chiefly of the World War films.

Irrigation, forestry, agriculture, and homemaking—The Bureau of Reclamation of the Department of the Interior, lends colored lantern slides and reels of motion picture films showing the work of the Bureau in irrigating and bringing into a state of cultivation arid sections of the United States. The subjects include dams, canals, laterals, and other constructions relating to engineering; also homes, schools, churches, and industries that have followed in the wake of cultivation. The Bureau sells at reasonable rates lantern slides, reels, and the photographs from which the slides are made.

[11] U. S. Department of Interior, Bureau of Mines. *Motion Picture Films.* Washington, D. C.: the Bureau. 23 p.

From the Forest Service of the Department of Agriculture, schools may obtain maps, posters, colored lantern slides, motion picture films, and traveling exhibits. The maps show the natural regions of the United States and the national forests. Some of the subjects covered by the lantern slides and motion picture reels relate to the life of a tree, farm woodlands, and reforestation. One, which outlines the system followed by the Forest Service in locating and fighting forest fires, includes some spectacular fire scenes.

Other motion picture films and glass lantern slides may be borrowed from the Office of Motion Pictures and the Office of Cooperating Extension Work of the Department of Agriculture. Film strips made by the Department may be purchased. Charts are also available on subjects relating to agriculture and home economics.

The motion picture films are designed especially to aid in the work of extension and field workers of the department and cooperating state institutions. The number of copies is inadequate to meet all of the requests from unofficial sources, but loans are made to schools and other organizations whenever copies of the desired pictures are available. Prints made from the department's negatives may be purchased at relatively low prices. A few sound pictures are available.

There are about one hundred and seventy-five series of glass lantern slides covering activities relating to agriculture and to homemaking. Supplementary notes explaining the illustrations on the slides help in their presentation.

Film strips are popular because of their teaching value and convenience. The Office of Cooperating Extension Work has available film strips on 163 different subjects such as crops, dairying, farm animals, forestry, food, clothing, health, and gardening; the cost ranges from fourteen to eighty-five cents per strip, depending upon the number of illustrations in the series.

Parks, public health, and labor—The Office of National Parks, Buildings and Reservations lends silent films and colored lantern slides. By the aid of these films children may have many vicarious experiences in the nation's playgrounds. They may play with the animals in Yellowstone, see the Yosemite from the saddle, fly over Mount McKinley, climb over the glaciers and view the fantastic mountain ranges in Glacier, and climb the Grant Teton.

The colored lantern slides include scenes from most of the national parks. Sets will be made up to comply with requests. The office has a few slides of the Petrified Forest, Tumacacori Mission, El Morro, and other national monuments of the southwest.

The stereopticon loan library established by the United States Public Health Service of the Treasury Department, consists of over 2500 views dealing with various aspects of public health problems. Some are adapted principally for physicians; others can be used with lay audiences. Stories of how life begins and how flies and mosquitoes spread diseases may be used advantageously with children in the upper elementary grades.

The Women's Bureau of the Department of Labor, lends to schools motion pictures, posters, charts, maps, and photographic exhibits showing conditions pertaining to wage-earning women. The subject of one of the latest films is *Behind the Scenes in the Machine Age.* It deals with the general theme of human waste in industry, particularly as related to women workers. Special emphasis is given to technological changes as a possible factor in unemployment unless a well-planned program of adjustment of workers displaced by machines is adopted.

THE LIBRARY—A RESERVOIR OF INFORMATION

The library that serves the school most effectively is one that is a reservoir of information for all of the departments of the school.[12] The collection and classification of the sources of visual aids that may be secured from state and federal agencies is an important school library function. Such files are invaluable for both teachers and children in planning and carrying out their units of work. Some of the materials that should be included in such a collection are listed below.

A. State Sources of Aids

A few typical examples have been discussed in the text of the article. Principals should write to their own state departments of education for lists of state agencies supplying aids to teaching. A list of these is to be found in the *Visual Education Directory, 1933* which may be obtained from the secretary of the Department of Visual Education, 1812 Illinois St., Lawrence, Kansas (80 p. $1.50).

B. Federal Sources of Aids to Teaching

(Address the agency set off by parentheses in each reference, in Washington, D. C., unless otherwise specified.)

DEPARTMENT OF AGRICULTURE

(1) Mimeographed description of films: *Motion Pictures on Forestry Subjects, 1933.* (Forest Service, Department of Agriculture.)

(2) Mimeographed list of charts: *Educational Charts on Agriculture and Home Economics.* (Office of Cooperating Extension Work, Department of Agriculture.) Cost of charts: 1-5 copies, 5 cents; additional copies above 5, 1 cent.

[12] For further development of this viewpoint see *Elementary School Libraries,* Twelfth Yearbook, Department of Elementary School Principals, National Education Association, 1933, 464 p.

(3) Lists, descriptions, prices, and construction helps: *Film Strips.* Miscellaneous Publicaton, No. 91, 1932. (Office of Cooperating Extension Work, Department of Agriculture.)
(4) Sources and titles: *Lantern Slides and Film Strips of the U. S. Department of Agriculture.* Miscellaneous Publication, No. 72, 1930. 14 p. (Government Printing Office.)
(5) Mimeographed supplement to Miscellaneous Publication, No. 72: *Lantern Slides and Film Strips of the U. S. Department of Agriculture.* (Office of Cooperating Extension Work, Department of Agriculture.)
(6) Classified list of available motion pictures: *Motion Pictures of the U. S. Department of Agriculture, 1932.* Miscellaneous Publication, No. 152. 32 p. (Office of Motion Pictures, Government Printing Office.) 5 cents.
(7) Mimeographed supplement to Publication No. 152: *Motion Pictures of the U. S. Department of Agriculture.* (Office of Motion Pictures, Department of Agriculture.)
(8) Directions to rural extension agents: *Use of Motion Pictures in Agricultural Extension Service.* Miscellaneous Circular, No. 78. 22 p. (Government Printing Office.) 10 cents.

DEPARTMENT OF COMMERCE

(9) List and description of films: *Composite List of Non-Theatrical Film Sources.* No. N, 46, 1932. (Bureau of Foreign and Domestic Commerce, Department of Commerce.)
(10) Photostat chart with information of film releases: *Current Releases of Non-Theatrical Films Combined with Non-Theatrical Film Notes.* M. P. 2, No. 8. (Bureau of Foreign and Domestic Commerce, Department of Commerce.) $1.00 per year.

DEPARTMENT OF INTERIOR

(11) Mimeographed specific catalogs (i.e., medical films) of titles and sources: *Catalogs of Non-Theatrical Films, 1933.* (Office of Education, Department of Interior.)
(12) A monthly list of available aids to teaching: *School Life.* Official journal of the Office of Education, published September thru June. (Government Printing Office.) 50 cents per year.
(13) Mimeographed list: *Government Departments Which Have Motion Picture Films for Free Distribution, 1933.* (Office of Education, Department of Interior.)
(14) Mimeographed list: *Some Commercial Companies from Which Lantern Slides May Be Bought or Rented, 1932.* (Office of Education, Department of Interior.)
(15) List and description of films: *Motion Picture Films, 1933.* 23 p. (Bureau of Mines, Department of Interior.)
(16) Mimeographed: *Form letter regarding motion picture reels and lantern slides.* (Bureau of Reclamation, Department of Interior.)
(17) Typed list of titles: *Moving Picture Films.* (Office of National Parks, Buildings, and Reservations, Department of Interior.)

DEPARTMENT OF LABOR

(18) Mimeographed list of visual aids: *Exhibits.* (Women's Bureau, Department of Labor.)

NAVY DEPARTMENT

(19) Lists and descriptions of films: *Navy Motion Picture Films.* (Address nearest recruiting station as given in text of foregoing article.)

TREASURY DEPARTMENT

(20) Mimeographed: *List of Motion Picture Films.* (Public Health Service, Treasury Department.)

(21) Mimeographed list of films prepared under supervision of surgeon general: *The Science of Life.* Twelve reel course of instruction in biology, communicable disease, and personal hygiene. (Public Health Service, Treasury Department.)

WAR DEPARTMENT

(22) Mimeographed list of available films: *Motion Pictures of the War Department.* (Office of the Chief Signal Officer, Army Pictorial Service, War Department.)

THE WORK of radio amateurs is one phase of education by radio—a phase which has been overlooked to too great an extent. When it is considered that a boy can build the apparatus for his radio station at an expense which may be kept within the limits of what he can earn in spare time, and that from his amateur station he can communicate with other boys in 50 or more other countries, educators will not be slow in seeing the educational possibilities in this pastime.—Perry, Armstrong, *Radio and Education,* Bulletin, 1931, No. 20, p. 625.

SOURCES OF PICTURE MATERIALS

ANN V. HORTON
Museum Instructor, Museum of Arts, Cleveland, Ohio

OUR PROGRAM, calling for an increasing amount of visual material, began some years ago as an experiment in art appreciation. When the art museum was new, teaching emphasis was placed upon giving children and teachers a working acquaintance with galleries and collections. Modifications to meet curriculum changes have been made and the plan has always been kept flexible to allow the needs of teachers to be a determining factor in changing the emphasis of the program.

From the beginning there was noted a desire on the part of the ablest teachers to make the museum experience, which is chiefly one of appreciation, carry over into experiences of the classroom. To find, to test, and to demonstrate the use of material which helps to do this has become one of the important services of the museum teacher.

Art appreciation is the child's chief business while in an art museum. He is surrounded by the most stimulating material and enjoyment is spontaneous, but art appreciation in the average classroom is one of those elusive activities which a principal can only hope is somehow included in the teachers' programs.

Fortunately children are by nature susceptible to quality in method and material, so a great deal of appreciation in the sense of enjoyment provided in the regular business of the school day, may be taken for granted. However, a child's program must have some *planned* as well as *casual* enrichment. The fine experiences which " just happen " should be repeated frequently by providing material of real beauty for children to enjoy.

The real problem of art appreciation, which is simply the enjoyment of beauty and order, is not the teacher's program which seems too heavy to bear another specific subject; surely the problem is not the child's sensitiveness which may be taken for granted. It is almost always the lack of vital and inspiring material with which to work.

Availability of materials—In listing the materials which follow, no reference has been made to the many excellent pictures which are brought to the attention of school people thru the advertising programs of school supply and publishing houses. It is assumed that these are known and used.

The following list is made up of a few publications which have been in great demand since first brought to teachers' attention by the

museum librarian. This list is short but it is growing. It makes no pretentious claim to enrichment for every school activity, but a claim to intensive help for specific needs.

In some instances public librarians can provide and lend the material listed below. Much of the material is in portfolio form. In some instances it is in book form, the pages of which, when unbound, make fine portfolios.

Because some material is so inexpensive that teachers may own it, while some is so valuable that only a school or library should afford it, an *approximate* price of each item is given. The stress of the times has rested heavily on publishers and some prices have changed since the materials to which preference is here made, were purchased. This uncertainty makes the right to list prices problematical and is only done to show whether supply by individuals or by institutions should be considered.

(1) *The Picturesque Series*—Each volume on a different country. American edition published by Brentano's, New York ($7.50). Brief, very interesting introduction. Plates are from beautiful photographs—printed in sepia, two to three hundred illustrations in each. Subjects include: architecture, sculpture, landscape, life of the people in Picturesque Spain, Picturesque Germany, etc.

(2) *Kiowa Indian Art*—Obtainable from C. Szwedzicki, 98 Rue de France, Nice, France. Portfolio of thirty plates ($30.00). The introduction in English is by a faculty member of the University of Oklahoma. Each plate is a water color showing such subjects as:

(a) Hopi Green Dance (Many are dance subjects);
(b) Kiowa Warrior.

This should help children to interpret and create design rather than to imitate slavishly.

(3) *Die Blauen Buecher*—Books of this series obtainable from German Book Importing Co., 27 Park Place, New York City. These books costing about $1.00 each contain seventy-five plates approximately 5 inches by 9 inches. Excellent photographic reproductions—finely printed. Out of a large series the following have been used:

(a) *Deutsche Burgen und Feste Schlosser*—German Castles.
(b) *Das Werk*—Photographs of steel structure, bridges—dynamic forms suggestive for modern poster work.
(c) *Aus Zoologische Gaerten*—Photographic studies of wild life.
(d) *Griechische Bildwerke*—Greek sculpture.

(4) *Wall charts from Stratton, "Styles of English Architecture"*—Obtainable from B. T. Batsford, Ltd., 15 North Audley Street, London, England.

13 charts—13 s
Single chart, unmounted—1 s, 4 d
Single chart, mounted—2 s, 10 d

There are twenty-five large charts about 36 inches by 22 inches, showing details of styles in English architecture—castles, monasteries, and churches are included—ranging from medieval times to late eighteenth century.

(5) *Art Forms in Nature, by Karl Biossfeldt*—Obtainable from E. Weyhe, 794 Lexington Avenue, New York City. First and second series, 120 plates in each series ($10.00) each.

These have inspiring suggestions for design and posters based on flowers, stems, seed-pods, and leaves.

(6) *Nisbet's History Pictures*—Obtainable from James Nisbet Co., Ltd., 22 Berners Street, London, W. 7. Price 1 s. The collections already issued: Old Britain to 1066, Norman and Plantagenet Periods, The Tudor Period, The Stuart Period, and Modern Times. Each contains about thirty pages, 8 inches by 10 inches, illustrating houses, costume, armor, and customs of period.

(7) *Les Animaux, by Dayot*—Obtainable from any dealer in French books or E. Weyhe, 794 Lexington Avenue, New York ($35.00). Five portfolios of animal designs—about thirty plates in each portfolio, obtainable separately. Shows animals in nature (a few)—mostly animals as designed by painter, draughtsman, or sculptor. Excellent for design from first to twelfth grade. Suggestive for clay modeling also.

(8) *Postcards of modern art*—Obtainable from International Art Publishing Co., 242 West Lafayette Boulevard, Detroit, Michigan (10 to 15 cents each). These are in good color and include such names as Gaugin, Van Gogh, and Cezanne.

(9) *British Museum postcards*—Obtainable from the British Museum, London, England. Small catalog with complete list of these sets available. It includes such subjects as:

(a) *Colored*—
Miniatures from Flemish Book of the Hours
Japanese color prints by Utamaro
Wall paintings from Egyptian tomb at Thebes
Turkish Pottery.

(b) *Monochromes*—
Drawings by Rembrandt
Drawings by Da Vinci
Watches of sixteenth to eighteenth century
Illustrations of English History
Sculptures of East Pediment of Parthenon.

These vary in price from 1 s (about 25 cents) to 2 s, 6 d (about 63 cents). Apply to sales department of large museums, both American and foreign, for reproductions of objects in their collections, especially colored postcards published by Max Jaffe, Vienna, Austria. The latter are available at Chicago Art Institute and Metropolitan Museum, New York.

(10) *Boston Museum school sheets*—Obtainable at sales department, Museum of Fine Arts, Boston. Several sheets at five and ten cents have been published. Each sheet contains many excellent notebook illustrations for periods of art history or for history courses. Small sheets have four to five pictures. Large sheets ten to twelve. (Subjects referring to specific periods as medieval: cross bows, manuscripts, windows.)

(11) *Reproductions of Japanese prints*—Obtainable from the Museum of Fine Arts, Boston, Massachusetts. Each $2.00.

(12) *Les costumes du Pays de France, by Keim*—Obtainable from French Book Shop, 556 Madison Avenue, New York City. Portfolio of sixty plates ($7.50). These plates are colored—probably by hand stencil. They show costumes of the country provinces.

(13) *Ornament in applied art, by Bossert*—Obtainable from E. Weyhe, 794 Lexington Avenue, New York City. One hundred and twenty-two plates in portfolio ($50.00). This is excellent design material for all age levels particularly sixth to twelfth grades. The plates include designs from pottery, textiles, small crafts. Pre-classic, Occidental, Islamic, Asiatic, and ancient American cultures are given emphasis. They are in color, carefully cataloged.

(14) *Peasant art in Europe, by Bossert*—Obtainable from E. Weyhe. One hundred plates in full color, thirty-two in black and white, reproducing twenty-one hundred examples of peasant ornament and handicraft ($45.00). This is one of the most helpful books for sources of design. Good reference for decoration of costumes and settings for plays.

(15) *Large color reproductions of masterpieces of painting*—Obtained from Rudolf Lesch, 225 Fifth Avenue, New York. International Art Publishing Co., 242 W. Lafayette Blvd., Detroit, Michigan. These are fine color reproductions ranging from Italian primitives to modern painters. They are the size of the originals in most instances and large enough to be seen by an entire room. Prices vary from $5.00 to $30.00.

(16) *Polish posters*—Each province of Poland represented by two posters about 9 inches by 20 inches. Obtainable, unmounted, from the Polish Book Importing Company, Incorporated, 38 Union Square, New York City. Sold in orders of five pairs or more at seventy-five cents per pair. These are fine for room decoration as well as suggestive of design.

(17) *The Newark Public Library "The Picture Collection"*—Obtainable from the H. W. Wilson Co., 950 University Avenue, New York City (90 cents). This bulletin gives very inclusive annotated list of addresses of publishers of pictures and books from which plates may be removed. This list includes a subject index which is an additional aid in using it.

THERE HAS PROBABLY BEEN no time in human history when the gulf between youth and adults was so wide as now. This has come about mainly as a result of motion pictures, children's features in the newspapers, the removal of industry from the home, automobiles, and radio broadcasting.

Radio broadcasting is the most far reaching of these new forces which play upon the child's mind. It goes into millions of homes that have no standards of discrimination; it reaches out-of-the-way places at all hours of the day and night; it exposes the child to programs which originate among the tenderloin elements in our large American cities.—Morgan, Joy Elmer, *Radio and the Home,* January 19, 1933, p. 8.

SOURCES OF TEACHING AIDS

ELLIS C. PERSING

Assistant Professor of Elementary Science, Western Reserve University, Cleveland, Ohio

THERE IS A GREAT VARIETY of free and inexpensive materials available to teachers. Many of such aids to teaching meet the needs of subjectmatter outlines or of the extra activities and experiences. Properly used these materials can be used to enrich elementary-school teaching. On the basis of the writer's experience in investigating this problem and publishing lists of available materials, he is convinced that teachers have a continuing interest in improving their classroom equipment.

The disadvantage of describing items giving the addresses of commercial firms is the fact that the supply is often exhausted in a comparatively short time and other items are substituted which do not satisfactorily meet the teacher's needs. It is therefore almost impossible to keep a master list up to date without continued correspondence.

It is hardly fair to ask commercial concerns to assume the expense of clerical help and postage in answering letters requesting items which are no longer available. For this reason, the master lists of materials, equipment, and supplies are not included in this article. Instead, the use of such lists as are given in the bibliography are described and suggested. Teachers can easily and quickly check thru such lists for items that meet their needs. The materials can be requested by letter or postcard. It is well to state briefly the specific needs in order that firms can make substitutions or suggest them if the items requested are no longer available.

Teachers should refrain from telling all of the pupils in the room to write to a firm requesting the same materials, when one request would be sufficient. Commercial concerns are usually willing to grant requests if they are moderate and reasonable.

Some system for filing and storing materials, equipment, and supplies should be provided in each school. A simple cabinet or system of drawers enables one to keep supplies systematically and have them easily available on a moment's notice.

Government publications—It may seem unnecessary to call attention to government publications, both national and state, but the writer has found that a great many teachers do not realize the wealth of material that can be obtained free, or for a nominal cost. The *Farmers' Bulletins* contain valuable subjectmatter and excellent illus-

trations suitable for use in connection with teaching units. The *Technical Bulletins* are better adapted to the higher grade levels, but are excellent source materials for teachers.

The Department of Agriculture offers many other publications. A list of available materials can be obtained upon request. The Park Service has prepared a splendid list of bulletins on the different national parks. The publications contain information relating to the vegetation and geological features, together with maps and illustrations. From the Forest Service one can obtain bulletins and maps relating to forestry and the forests of the United States. Exhibits and lantern slides are also available for the cost of transportation.[1]

The Health Service makes available statistics relating to health and sanitation. Information for the lay person is offered in bulletin and poster form. There are also films on hygiene for educational purposes.

The United States Biological Survey is another government agency thru which valuable materials are made available. There are still a variety of materials to be secured from other government bureaus.

Maps—Excellent maps of different kinds are to be obtained from the United States Geological Survey, the United States Forest Service, and the United States Park Service.[2] Even tho such materials are free one should remember that they are costly to prepare and should be used accordingly.

The railroads prepare and distribute some interesting and helpful maps of the regions served by their systems. Other maps are to be had from commercial firms as advertising materials. (See the master lists in the bibliography.)

Exhibits and displays—There are numerous exhibits that are helpful in learning about the processes by which certain products are prepared. The displays offered by the makers of certain food stuffs are most attractive and useful.

A considerable number of the industrial processes are illustrated by exhibits and displays which are costly to prepare but which are available to schools free or at a small cost.

Booklets and charts—The booklets of many commercial firms are frequently prepared by technically-trained persons and are therefore reliable and helpful sources of information. Usually considerable expense has been incurred to produce the illustrations. They are, in most cases, excellent visual aids in teaching. Booklets cover

[1] See the article in this chapter by Edith A. Lathrop.
[2] See article by William D. Boutwell in the 1932 yearbook, Department of Elementary School Principals, p. 541-45.

a wide range of subjectmatter such as foods, beverages, first aid, nutrition, health, building materials, glass, steel and other metals, lumber, paper, refrigeration, and so the list continues.

Educational motion picture film—The number of titles available in motion picture film is usually not realized by principals and teachers. During the past year, a committee of the Cleveland Natural Science Club prepared a list of films available, without charge, or for a small cost to cover postage. Letters were sent to government bureaus and commercial concerns requesting lists of available film for school and club use. The replies have been classified and arranged in a file. This plan makes available film from all parts of the United States, for educational purposes. The subjects include the following: asbestos, asphalt, automobiles, animals (both domestic and wild), cement, cereals, clothing, cotton, country life, dairying, electricity, engineering, forestry, insects, gasoline, lumbering, marketing, and metrology.

Master lists—Among some of the helpful lists with which principals should be familiar are the following:

1. Brown, H. E. and Bird, Joy. *Motion Pictures and Lantern Slides for Elementary Visual Education.* New York: Teachers College, Columbia University, 1931. 105 p.
2. Chicago Principals' Club. "Free and Inexpensive Health Publications." *Bulletin* 10: 695-701; July, 1931. Washington, D. C.: Department of Elementary School Principals, National Education Association.
3. Colvin, Robert B. "Advertisements as a Teaching Device in General Science." *School Science and Mathematics* 34: 79-83; January, 1934.
4. Frank, Joseph O. *How to Teach General Science.* Philadelphia: P. Blakiston's Sons & Co., 1926. 240 p.
5. Greene, Nelson L., chairman. *1000 and One* (Blue Book of Non-theatrical Films). Chicago: Educational Screen Inc., 1934. 128 p.
6. Knox, Rose B. *School Activities and Equipment.* Boston: Houghton Mifflin Co., 1927. 386 p.
7. Persing, Ellis C. "Materials for Enriching the Teaching of Science." *Science and Invention School Service Magazine,* Vol. 1, No. 3; 1931.
8. Richmond, Edna. *Materials of Instruction Which May Be Obtained Free Or At Small Cost.* Fairmont, West Virginia: The Author, State Normal School, 1930. 110 p.
9. Smith, Homer J. *Teaching Aids for the Asking.* Minneapolis: University of Minnesota Press, 1928. 60 p.
10. Victor Animatograph Corporation. *Directory of Film Sources.* Davenport, Iowa: the Corporation, October, 1931. 64 p.
11. Woodring, Maxie N., Oakes, Mervin E., and Brown, Henry E. *Enriched Teaching of Science in the High School.* New York: Bureau of Publications, Teachers College, Columbia University, 1928. 374 p.

OFFICIAL INFORMATION

INTRODUCTORY STATEMENT

THE LIST of local administrative clubs in which elementary-school principals are interested has been extended this year to include 222 groups. In 1932 and 1933 the yearbooks listed 218 and 205 organizations respectively. Of the 199 clubs reporting the number of members this year, eighty-six had fewer than twenty-five participants. Twenty-three groups enrolled more than one hundred members, of which nine had memberships of more than two hundred. The average group consisted of about thirty-two persons. The dues reported by 146 of the local clubs ranged "less than a dollar" to fifteen dollars, with one dollar as the average sum. Only sixty-five of the 222 organizations restrict their memberships to persons in the elementary-school principalship.

From the reports on the state principals associations one obtains the impression that these groups are wavering under the vicissitudes of the depression. While thirty groups reported in 1933 only twenty-seven are to be found in the following list. Of these, thirteen restrict their memberships to principals. Only half of the twenty-seven groups reported exact enrolments. Three had memberships of less than seventy-five, while five reported between one hundred and five hundred. Several presidents wrote that all principals who enrolled in the state teachers association were considered members of the state principals organization also. Seven of the state principals groups charge no dues, six charge less than one dollar, and the rest vary between one dollar and two dollars and fifty cents per year.

The membership list of the national association of elementary-school principals totaled 669 in 1922. By 1929 the enrolment increased to approximately 4300. Two years later the membership included about 4800 persons. As the depression began to exert its influence upon education the number of members dropped rapidly until it flattened out at about 3700. It has remained at the plateau for the past three years. With the upward turn of economic conditions we may expect the national membership once more to approach, if not exceed, the 5000 mark within the next three years.

Of one thing we may be sure during the New Deal—progress comes thru cooperation and unity of purpose. How long will it take many elementary-school principals to learn this simple lesson?—*Editorial Committee.*

LOCAL PRINCIPALS ORGANIZATIONS

In the following roster the symbol (1) is used to indicate the person reported as president and (2) is used to indicate the secretary.

AKRON, OHIO—WOMEN PRINCIPALS' CLUB. (1) Nellie Haymaker, Forest Hill School. (2) Mrs. Jennie Adams, Lawndale School, Lawndale.

ALAMEDA, CALIF.—PRINCIPALS' CLUB. (1) J. M. Bryan, Lincoln School. (2) Arthur Heche, Washington School.

ALLENTOWN, PA.—SCHOOLMEN'S CLUB. (1) Solon Fegley, 34 N. 13th St. (2) Richard W. Hartzell, 1037 Linden St.

ATLANTA, GA.—PRINCIPALS' CLUB. (1) Rusha Wesley, 995 W. Peachtree St. (2) Mrs. R. B. Whitworth, Tenth Street School.

BALTIMORE, MD.—PRINCIPALS' ASSOCIATION. (1) Emily W. Eversfield, 3614 Mohawk Ave. (2) M. Grace Schaut, 3312 W. North Ave.

BATTLE CREEK, MICH.—PRINCIPALS' CLUB. (1) Paul Rehmus, Battle Creek High School. (2) Mrs. Doris Klaussen, Fremont School.

BAY CITY, MICH.—GRADE PRINCIPALS' CLUB. (1) Helen MacGregor, 312 Fremont Ave. (2) Anna T. Reardon, 306 N. Linn St.

BEAUMONT, TEX.—JEFFERSON COUNTY PRINCIPALS' AND SUPERVISORS' CLUB. (1) Mrs. Maude Harrison, Port Neches. (2) Cynthia Brazelton, Port Neches.

BELLINGHAM, WASH.—ADMINISTRATIVE GROUP. (1) W. O. E. Radcliffe, 437 21st St. (2) Madge S. Ware, 601 E. Holly St.

BERKELEY, CALIF.—PRINCIPALS' AND SUPERVISORS' ASSOCIATION. (1) Jeannette Barrows, 1345 Arch St. (2) J. L. Blumb, 2322 Shattuck Ave.

BIRMINGHAM, ALA.—PRINCIPALS' CLUB. (1) T. M. Kegley, Minor School. (2) Gertrude E. McLatchie, Elyton School.

BIRMINGHAM, ALA.—SCHOOLMASTERS' CLUB. (1) E. B. Calhoun, Norwood School. (2) J. Eli Allen, Phillips High School.

BOSTON, MASS.—ELEMENTARY PRINCIPALS' ASSOCIATION. (1) John M. McDonnell, Phillips Brooks School, Dorchester. (2) Joseph A. F. O'Neill, Warren School, Charlestown.

BOSTON, MASS.—INTERMEDIATE PRINCIPALS' ASSOCIATION. (1) Frederick W. Swan, Arlington and Fayette Sts. (2) Sidney T. H. Northcott, Cambridge and Warren Sts., Brighton.

BOSTON, MASS.—PRINCIPALS' ASSOCIATION. (1) Charlotte Rafter, 22 Gaylord St., Dorchester. (2) Myrtle C. Dickson, 64 Kirkwood Road, Brighton.

BRIDGEPORT, CONN.—ELEMENTARY SCHOOL PRINCIPALS' CLUB. (1) Luella Callahan, Read School. (2) Elizabeth Roche, Garfield School.

BROOKLYN, N. Y.—ASSOCIATION OF PRINCIPALS OF 8B SCHOOLS. (1) Charles T. Trace, P. S. No. 91. (2) Mary F. Starkey, 466 E. 25th St.

BUFFALO, N. Y.—ELEMENTARY SCHOOL PRINCIPALS' ASSOCIATION. (1) Vincent A. Carberry, 59 Covington Rd. (2) Irene Mason, 17 Wellington Rd.

CAMBRIDGE, MASS.—GRAMMAR MASTERS' CLUB. (1) John H. Graham, Russell School. (2) John F. Lynch, Webster School.

CAMDEN, N. J.—PRINCIPALS' ASSOCIATION. (1) Harry M. Showalter, 1478 Kaighn Ave. (2) Ethel M. Lee, 673 Fairview St.

CANTON, OHIO—PRINCIPALS' CLUB. (1) Mrs. Katharine M. Mansfield, 3216 Tuscarawas St., W. (2) M. P. Watts, R. D. No. 2, Washington Blvd. N. W.

CASPER, WYO.—ELEMENTARY SCHOOL PRINCIPALS' ASSOCIATION. (1) Adelle Stinson, Jefferson School. (2) Mae I. Winter, Park School.

CEDAR RAPIDS, IOWA—PRINCIPALS' AND SUPERVISORS' CLUB. (1) Annie Smithy, Arthur School. (2) Henriette Bures, Kenwood School.

CHARLESTON, S. C.—PRINCIPALS' CLUB. (1) J. E. Rogers, 4 Rutledge Blvd. (2) Simon Fogarty, 151 Moultrie St.

CHARLOTTE, N. C.—PRINCIPALS' ASSOCIATION. (1) Forest T. Selby, Technical High School. (2) Nell Mann, Leb Vance School.

CHATTANOOGA, TENN.—LOOKOUT SCHOOLMASTERS' CLUB. (1) H. B. Barks, Baylor School. (2) F. H. Trotter, Alton Park School.

CHESTER, PA.—PRINCIPALS' ASSOCIATION. (1) Margaret C. Stetser, Smedley Junior High School. (2) Sarah J. Parker, Morton School.

CHICAGO, ILL.—ELLA FLAGG YOUNG CLUB. (1) Mary R. Hanlon, 6749 Cornell Ave. (2) Ruth M. Rathbun, 5941 N. Kilbourn Ave.

CHICAGO, ILL.—PRINCIPALS' CLUB. (1) Aaron Kline, Pullman Public School. (2) Claude L. Williams, 228 N. LaSalle St.

CICERO, ILL.—PRINCIPALS' CLUB. (1) B. W. Hunsaker, 57th Ave. and 23rd St. (2) Jennie Law, 59th Ave. and 12th St.

CINCINNATI, OHIO—ELEMENTARY PRINCIPALS' CLUB. (1) C. L. Miller, 6237 Savannah Ave. (2) O. W. Renfrow, 850 Ludlow Ave.

CLEVELAND, OHIO—ELEMENTARY PRINCIPALS' CLUB. (1) Carrie C. Bruhn, 10602 Wade Park Ave. (2) Emma A. Waldeck, 3418 Sylvanhurst Rd., Cleveland Heights.

CLEVELAND HEIGHTS, OHIO—PRINCIPALS' AND SUPERVISORS' ASSOCIATION. (1) Laurence B. Brink, Monticello Junior High School. (2) Lillian A. Cleland, 2444 Lee Rd.

CLIFTON, N. J.—SCHOOLMASTERS' CLUB. (1) Conrad Schweitzer, Hawthorne. (2) Charles W. Robinson, 265 W. 2d St.

COLORADO SPRINGS, COLO.—PUBLIC SCHOOL PRINCIPALS' ASSOCIATION. (1) Katherine Courtney, 1120 N. Cedar St. (2) Rose Bland, 627 N. Nevada Ave.

COLUMBIA, S. C.—WARDLAW CLUB. (1) J. P. Coots, Columbia. (2) S. P. Schneider, Columbia.

COLUMBUS, OHIO—ELEMENTARY SCHOOL PRINCIPALS' ROUND TABLE. (1) Mrs. Margaret M. Rarey, 379 S. Ohio Ave. (2) L. N. Drake, 195 Tibet Rd.

CONCORD, N. H.—PRINCIPALS' ASSOCIATION. (1) Dorothy Gribbin, 46 School St. (2) Ilya Chamberlin, 2 View St., W. Concord.

COUNCIL BLUFFS, IOWA—ELEMENTARY PRINCIPALS' CLUB. (1) Jennette Hanigan, 118 S. Seventh St. (2) Jessie M. Alworth, 32 Oakland Court.

COVINGTON, KY.—SCHOOLMASTERS' CLUB. (1) D. B. Hubbard, Sixth District School. (2) Russell Helmick, Tenth District School.

CRANSTON, R. I.—COUNCIL OF PRINCIPALS AND SUPERVISORS. (1) Annie M. Brown, 85 Hamilton St., Providence. (2) Mrs. Edith A. Linnell, 427 Cole Ave., Providence.

CUMBERLAND, MD.—ELEMENTARY PRINCIPALS' ASSOCIATION OF ALLEGHANY COUNTY. (1) William G. Fatkin, Luke. (2) John F. Manley, Frostburg.

DALLAS, TEX.—PRINCIPALS' CLUB. (1) Minnie H. Swindells, Sam Houston School. (2) W. A. Hamilton, City Park School.

DANVILLE, ILL.—CUBBERLEY CLUB. (1) L. M. Erickson, 602 N. Hazel St. (2) R. G. Seitzinger, 102 S. Crawford St.

DAYTON, OHIO—PRINCIPALS' AND SUPERVISORS' ASSOCIATION. (1) Nell H. Brown, McKinley School. (2) Bess Heiser, Irving School.

DEARBORN, MICH.—FORDSON SCHOOLMEN'S CLUB. (1) Stanley S. Smith, Fordson High School. (2) John W. Beauchamp, Fordson High School.

DENVER, COLO.—PRINCIPALS' AND DIRECTORS' ASSOCIATION. (1) S. R. Hill, Manual High School. (2) Pearl Queree, Boulevard School.

DES MOINES, IOWA—PRINCIPALS' AND SUPERVISORS' CLUB. (1) Clay Slinker, 629 3d St. (2) O. S. Weaver, 1153 28th St.

DETROIT, MICH.—SCHOOLMEN'S CLUB. (1) Cyril J. McCarthy, 14655 Rosemont. (2) Ben S. Frost, 3636 Courville.

DETROIT, MICH.—WOMEN PRINCIPALS' CLUB. (1) Mary Farnsworth, 441 W. Hancock. (2) Helen VanGallow, 8575 Dumbarton Rd.

DUBUQUE, IOWA—ELEMENTARY PRINCIPALS' CLUB. (1) Alice J. Greenhow, 439 Winona St. (2) Stella F. Sheridan, 1491 Bluff St.

DULUTH, MINN.—PRINCIPALS' CLUB. (1) Elsa Becker, Fairmount School. (2) Mrs. Marion Wiersch, Chester Park School.

EAST SAINT LOUIS, ILL.—PRINCIPALS' ASSOCIATION. (1) Morton M. Benham, Jefferson School. (2) S. N. Nalbach, George Rogers Clark Junior High School.

ELGIN, ILL.—PRINCIPALS' SECTION, COUNCIL OF EDUCATION. (1) Wilerdean Gillilan, 851 Prospect St. (2) Mrs. Winifred John, 424 Walnut St.

ELIZABETH, N. J.—PRINCIPALS' ASSOCIATION. (1) Florence S. Mason, School No. 14. (2) Isabel Y. Killough, School No. 9.

EL PASO, TEX.—ELEMENTARY SCHOOL PRINCIPALS' ASSOCIATION. (1) Lillian Phillips, Box 1428. (2) Mrs. Minnie Clifton, 2734 Federal.

ERIE, PA.—ELEMENTARY PRINCIPALS' AND SUPERVISORS' ASSOCIATION. (1) Frank Miller, Jefferson School. (2) Minnie C. Willis, Emerson School.

EVANSTON, ILL.—PRINCIPALS' CLUB. (1) Ruby E. Rowley, North Shore Hotel. (2) Lois Margaret Davis, 921 Sheridan Rd.

EVANSVILLE, IND.—SCHOOLMEN'S CLUB. (1) M. L. Staples, R. R. No. 1, Box 479. (2) Alex Jardine, 800 Bayard Park Drive.

EVERETT, MASS.—PRINCIPALS' ASSOCIATION. (1) James T. Gearon, 20 Summer St. (2) Mabel M. Gardner, 46 Forest Ave.

EVERETT, WASH.—ADMINISTRATIVE CLUB. (1) Nell Kantner, Senior High School. (2) Laura Stubbelfield, North Junior High School.

EVERETT, WASH.—PRINCIPALS' CLUB. (1) J. R. Byers, 2409 Rucker Ave. (2) E. H. Evans, 1106 Hoyt Ave.

FALL RIVER, MASS.—ELEMENTARY PRINCIPALS' CLUB. (1) Lottie W. Wainwright, 533 Broadway. (2) Isadore M. F. Hathaway, 49 Stafford R.

FLINT, MICH.—PRINCIPALS' AND SUPERVISORS' ASSOCIATION. (1) Mrs. Clara Hilborn, Pierson Elementary School. (2) Dorah Young, Clark Elementary School.

FORT WAYNE, IND.—PRINCIPALS' CLUB. (1) George C. Kapnick, Hanna School. (2) Chloe Troyer, Lakeside School.

FORT WORTH, TEX.—PRINCIPALS' AND VICE-PRINCIPALS' ASSOCIATION. (1) J. P. Moore, Nashville and Avenue B. (2) T. M. Trimble, Hughes and Hampshire.

FRESNO, CALIF.—ELEMENTARY PRINCIPALS' CONFERENCE. (1) H. L. Buckalew, 408 N. Fulton. (2) James A. McGuffin, Rt. No. 1, Box 416A.

GARY, IND.—ADMINISTRATIVE WOMEN IN EDUCATION. (1) Margaret Southwick, Board of Education Office. (2) Isabelle V. Jones, Board of Education Office.

GARY, IND.—PRINCIPALS' ASSOCIATION. (1) J. W. Standley, Roosevelt School. (2) Mary G. Ballantyne, Franklin School.

GLENDALE, CALIF.—PRINCIPALS' AND SUPERVISORS' CLUB. (1) Eugene Wolfe, 3222 Orilla St. (2) Joanna Heideman, Roosevelt Junior High School.

GRAND RAPIDS, MICH.—PRINCIPALS' EXCHANGE CLUB. (1) Nellie C. Morrison, 243 Orchard Hill. (2) Bertha F. Smith, 316 Hollister Ave.

HARRISBURG, PA.—SCHOOLMEN'S CLUB. (1) William D. Meikle, 2514 N. 5th St. (2) Milton O. Billow, 2419 N. 5th St.

HARTFORD, CONN.—PRINCIPALS' CLUB. (1) Gustave Feingold, Bulkeley High School. (2) Thomas F. Carberry, Brown School.

HAVERHILL, MASS.—PRINCIPALS' CLUB. (1) Abbie C. Grover, 364 Main St. (2) Annie P. Roche, 261 Hilldale Ave.

HAZLETON, PA.—PRINCIPALS' CLUB. (1) D. J. Lewis, 328 W. Maple St. (2) Stewart Veale, 81 N. Church St.

HOLYOKE, MASS.—WOMEN PRINCIPALS' CLUB. (1) Katharine A. Mahoney, E. L. Kirtland School. (2) Mary McTigue, Springdale School.

HOUSTON, TEX.—PRINCIPALS' ASSOCIATION. (1) Jake R. Waters, George Washington Junior High School. (2) Mrs. Mabel T. Woods, Briscoe Elementary School.

INDIANAPOLIS, IND.—COUNCIL OF ADMINISTRATIVE WOMEN IN EDUCATION. (1) Mrs. Mary S. Ray, 3849 N. Delaware St. (2) Elizabeth E. Bettcher, 3510 N. Meridian St.

JACKSON, MICH.—ELEMENTARY PRINCIPALS' CLUB. (1) Helen M. Horner, 114 S. Grinnell. (2) Ethel Herda, 1114 Union St.

JAMESTOWN, N. Y.—SCHOOLMASTERS' CLUB. (1) Bert Furman, 520 W. 5th. (2) Allen F. Ayers, 610 Prendergast.

JAMESTOWN, N. Y.—WOMEN PRINCIPALS' CLUB. (1) Bettie A. Olson, 211 Prospect St. (2) None.

JERSEY CITY, N. J.—MALE PRINCIPALS' ASSOCIATION. (1) Michael Finnegan, P. S. No. 6. (2) Emmett J. Campbell, P. S. No. 3.

JERSEY CITY, N. J.—WOMEN PRINCIPALS' ASSOCIATION. (1) Mrs. Flora H. Smith, 70 Morgan Pl., N. Arlington. (2) Helen McMahon, 162 Fairview Ave.

JOHNSTOWN, PA.—SCHOOLMEN'S CLUB. (1) H. C. Bohn, Chandler School. (2) R. E. Benchoff, Senior High School.

KALAMAZOO, MICH.—ELEMENTARY PRINCIPALS' CLUB. (1) Pearl T. Schoolcraft, 1430 Hillcrest Ave. (2) F. B. Wiley, Washington School.

KANSAS CITY, KANS.—ELEMENTARY PRINCIPALS' CLUB. (1) Elizabeth Sparks, Central School. (2) Claire Jarvis, Quindaro School.

KANSAS CITY, MO.—ELEMENTARY PRINCIPALS' CLUB. (1) B. T. Ritter, 570 Evanston. (2) Inez L. Mack, 3517 Main St.

KEARNY, N. J.—PRINCIPALS' ASSOCIATION. (1) William Ross, Lincoln School, Arlington. (2) May Borden, 81 Midland Ave., Arlington.

KNOXVILLE, TENN.—PRINCIPALS' AND SUPERVISORS' CLUB. (1) L. G. Gardner, Fari Garden School. (2) Mrs. Eva M. Byrd, 625 W. Church.

LANSING, MICH.—ELEMENTARY PRINCIPALS' ASSOCIATION. (1) Inez E. Halladay, Barnes Avenue School. (2) Gretchen Doelle, Cedar Street School.

LAWRENCE, MASS.—ELEMENTARY PRINCIPALS' ASSOCIATION. (1) Lilian B. Haverty, 297 S. Broadway. (2) Helen F. Gainey, 1 Kingston St.

LAWRENCE, MASS.—GRAMMAR MASTERS' ASSOCIATION. (1) James F. Hennessey, 24 Trinity St. (2) Jennie A. McManus, 219 S. Broadway.

LEXINGTON, KY.—ELEMENTARY PRINCIPALS' CLUB. (1) E. E. Gotherman, 750 S. Limestone. (2) Jean Smith, 155 N. Bruce.

LINCOLN, NEBR.—SCHOOL FORUM. (1) S. Adelia Winter, 1724 F St. (2) Rose Mikulas, Lindell Hotel.

LITTLE ROCK, ARK.—PRINCIPALS' ROUND TABLE. (1) S. C. Swearingen, East Side Junior High School. (2) G. T. Huckaby, Pulaski Heights Junior High School.

LONG BEACH, CALIF.—PRINCIPALS' CLUB. (1) Vincent I. Correll, 1838 McKenzie St. (2) Irene A. Benning, 155 Nieto Ave.

LONG BEACH CALIF.—SUPERVISORS' CLUB. (1) C. H. Woodruff, 2327 Carroll Park S. (2) Lorraine Cates, 2171 Pine Ave.

LOS ANGELES, CALIF.—COUNCIL OF DIRECTORS AND SUPERVISORS. (1) Mary Frances Martin, 843 Chamber of Commerce Bldg. (2) Grace Dupuy 843 Chamber of Commerce Bldg.

LOS ANGELES, CALIF.—JUNIOR HIGH SCHOOL PRINCIPALS' ASSOCIATION. (1) C. A. Dickison, Lafayette Junior High School. (2) Mrs. Alice B. Struthers, Thomas Starr King Junior High School.

LOS ANGELES CALIF.—PRINCIPALS' CLUB. (1) Raymond E. Pollick, Grant School. (2) Mrs. Myra E. B. Nelson, Hooper Avenue School.

LOS ANGELES, CALIF.—SCHOOLMASTERS' CLUB. (1) Howard A. Campion, Frank Wiggins Trade High School, (2) John E. Wright, Miramonte School.

LOUISVILLE, KY.—PRINCIPALS' CLUB. (1) Mamie Drewry, 2027 Baringer Ave. (2) Nell Warden, 2035 Sherwood Ave.

LOWELL, MASS.—MASTERS' CLUB. (1) W. W. Dennett, 121 Sanders Ave. (2) John E. Barr, 168 Sixth St.

MALDEN, MASS.—ELEMENTARY PRINCIPALS' CLUB. (1) Minnie G. Thompson, Maplewood School. (2) Signe Johnson, Lincoln Elementary School.

MANSFIELD, PA.—TIOGA COUNTY PRINCIPALS' ASSOCIATION. (1) Warren L. Miller, Mansfield. (2) L. E. Baird, Mansfield.

MARION, OHIO.—SCHOOLMASTERS' CLUB. (1) Richard A. Garvin, 368 Summit St. (2) C. W. Gabler, 263 Marion Ave.

MEMPHIS, TENN.—PRINCIPALS' ASSOCIATION. (1) W. L. Maybry, 1893 Crump Ave. (2) Lucille Ham, 1957 Lyndale.

MERIDIAN, MISS.—PRINCIPALS' CLUB. (1) J. H. Owings, 2910 8th St. (2) Ellie Archer, 1213 20th Ave.

MIAMI, FLA.—DADE COUNTY PRINCIPALS' CLUB. (1) Olga Benson, 826 S. W. 6th St. (2) Roland Sweet, 7945 N. W. 6th Ave.

MILWAUKEE, WIS.—ADMINISTRATIVE WOMEN'S ASSOCIATION. (1) Anna Millmann, Luther Burbank School. (2) Elsa Leiser, Fernwood School.

MILWAUKEE WIS.—PRINCIPALS' ASSOCIATION. (1) Justus C. Castleman, 2600 W. Oklahoma Ave. (2) Max C. Fritschel, Jr., 2418 N. Maryland Ave.

MILWAUKEE, WIS.—SCHOOLMASTERS' CLUB. (1) Francis C. Rosecrance, 1111 N. Tenth St. (2) Frank Adams, 3034 N. Murry Ave.

MINNEAPOLIS, MINN.—PRINCIPALS' FORUM. (1) Albert M. Bank, Lincoln Junior High School. (2) Esther Sherwood, Hale and Page Schools.

MOBILE, ALA.—ELEMENTARY PRINCIPALS' CLUB. (1) Mary B. Austin, 210 George St. (2) Carrie Bright, 170 Houston St.

MONTGOMERY, ALA.—PRINCIPALS' CLUB. (1) Janie L. Rives, 5 High St. (2) Ruth Collins, Route No. 3.

MOUNTAIN VIEW, CALIF.—SANTA CLARA COUNTY PRINCIPALS' ASSOCIATION. (1) Kenneth N. Slater, 316 Loreto St. (2) James Ferguson, San Martin.

MOUNT VERNON, N. Y.—DISCUSSION CLUB. (1) Ebba Dederer, 60 S. Third Ave. (2) Mrs. M. T. King, Grimes School.

MOUNT VERNON, N. Y.—ELEMENTARY SCHOOL PRINCIPALS' ASSOCIATION. (1) Mrs. Edith F. Werner, 10 Rich Ave. (2) Grace L. Davis, 10 Rich Ave.

MUSKEGON, MICH.—PRINCIPALS' AND SUPERVISORS' COUNCIL. (1) Margaret Cooper, Nims School. (2) Elizabeth Combe, Hackley School.

NEWARK, N. J.—PRINCIPALS' ASSOCIATION. (1) Gray M. Moreland, Newton Street School. (2) Harold H. Phillips, Sussex Avenue School.

NEWARK, N. J.—SCHOOLMEN'S CLUB. (1) Max J. Herzberg, Weequahic High School. (2) Pasquale Sozio, Morton Street School.

NEWARK, N. J.—SCHOOLWOMEN'S CLUB. (1) Eleanor M. Bloomfield, Cleveland Junior High School. (2) Helen A. Tice, Abington Avenue School.

NEWARK, N. J.—VICE-PRINCIPALS' ASSOCIATION. (1) Mrs. Jennie M. Denning, Fourteenth Avenue School. (2) Agnes Wharton, Cleveland Junior High School.

NEW BEDFORD, MASS.—PRIMARY PRINCIPALS' CLUB. (1) Sophie T. Anthony, 24 Maple View Terrace. (2) Kate Moore, 105 Park St.

NEW BEDFORD, MASS.—PRINCIPALS' CLUB. (1) Louis D. Cook, 2 Morgan Terrace. (2) Same.

NEW CASTLE, PA.—ELEMENTARY PRINCIPALS' CLUB. (1) R. G. Leslie, McGill School. (2) Anna R. Perry, Aiken School.

NEW HAVEN, CONN.—PRINCIPALS' CLUB. (1) Gertrude D. Thomson, 365 Peck St. (2) Millicent R. McDermott, Short Beach Rd., East Haven.

NEW ORLEANS, LA.—COLORED PRINCIPALS' ASSOCIATION. (1) Fortunatus P. Ricard, 2902 Louisiana Ave. (2) Maude R. Dedeaux, 3425 LaSalle St.

NEW ORLEANS, LA.—PRINCIPALS' ASSOCIATION. (1) A. E. Perkins, 2911 Milan. (2) E. I. C. Dunn, 3411 Broadway St.

NEW YORK, N. Y.—PRINCIPALS' ASSOCIATION. (1) Arthur Bowie, P. S. No. 206, Brooklyn. (2) August Lodato, P. S. No. 44, Brooklyn.

NEW YORK, N. Y.—PRINCIPALS' CLUB. (1) Arthur K. Krause, P. S. No. 132, Manhattan. (2) Sara L. Rhodes, P. S. No. 3, Bronx.

NEW YORK, N. Y.—SCHOOLMASTERS' CLUB. (1) John R. Wilson, Paterson, N. J. (2) Alson A. Upham, 120 E. 19th St., Brooklyn.

NIAGARA FALLS, N. Y.—SCHOOLMASTERS' CLUB. (1) Robert C. Simpson, 2497 Weston Ave. (2) Tom Justice, 349 Orchard Parkway.

NORFOLK, VA.—PRINCIPALS' ASSOCIATION. (1) W. L. Harrell, Larchmont Public School. (2) Ruth Livermon, Meadowbrook Public School.

OAKLAND, CALIF.—PRINCIPALS' CLUB. (1) R. W. Snyder, Lincoln School. (2) Ruth Mason, San Leandro High School.

OAKLAND, CALIF.—SUPERVISORS' CLUB. (1) J. Frederic Ching, 1025 Second Ave. (2) Rua Van Horn, 1025 Second Ave.

OKLAHOMA CITY, OKLA.—ELEMENTARY SCHOOL PRINCIPALS' CLUB. (1) W. T. Leach, Washington School. (2) Ethel Liebhart, Gatewood School.

OMAHA, NEBR.—ELEMENTARY SCHOOL PRINCIPALS' CLUB. (1) Ida Blackmore, Park School. (2) Mrs. Clara S. Mills, Edward Rosewater School.

OSHKOSH, WIS.—PRINCIPALS' CONFERENCE. (1) Charles I. Yule, 110 Grand Ave. (2) D. H. Wright, 469 Jackson Drive.

PASADENA, CALIF.—ELEMENTARY PRINCIPALS' ASSOCIATION. (1) Leah Crose, Webster School. (2) DeRoy Cobb, Edison School.

PATERSON, N. J.—PRINCIPALS' ASSOCIATION. (1) A. Reese Matteson, P. S. No. 11. (2) Eleanor Mombert, P. S. No. 14.

PENSACOLA, FLA.—ELEMENTARY PRINCIPALS' CLUB. (1) Olive Swearingen, 1623 N. 7th Ave. (2) Clara Stokes, 52 W. Gonzalez St.

PEORIA, ILL.—MEN ELEMENTARY PRINCIPALS. (1) Anthony Middleton, 221 Arthur Ave. (2) George Harms, 909 W. Armstrong.

PERTH AMBOY, N. J.—PRINCIPALS' CLUB. (1) Royal L. Predmore, P. S. No. 6. (2) Ingeborg Oksen, P. S. No. 6.

PHILADELPHIA, PA.—PRINCIPALS' CLUB. (1) Willard Zahn, James Martin School. (2) Reinhold W. Goll, James Elverson Junior School.

PHILADELPHIA, PA.—SCHOOLMEN'S CLUB. (1) Thomas J. Dobbins, Germantown. (2) James Lansdowne, Philadelphia.

PHOENIX, ARIZ.—ELEMENTARY SCHOOL PRINCIPALS' AND SUPERINTENDENTS' ASSOCIATION. (1) G. S. Skiff, Wilson School. (2) G. L. Downs, Cartwright School.

PITTSBURGH, PA.—ALLEGHENY COUNTY PRINCIPALS' ROUND TABLE. (1) C. C. Pearsall, Pitcairn. (2) M. A. Steiner, Ingram, Pittsburgh.

PITTSBURGH, PA.—PRINCIPALS' CLUB. (1) Adda M. Mann, Ruskin Apts. (2) Irene Thompson, 925 N. Saint Clair St.

PLAINFIELD, N. J.—PRINCIPALS' CLUB. (1) J. Wade Wimer, Jefferson School. (2) Ernest M. Peffer, Maxson School.

PONTIAC, MICH.—ELEMENTARY SCHOOL PRINCIPALS' CLUB. (1) Nina Doty, 160 State Ave. (2) Alice Shattuck, 193 E. Iroquois Rd.

PORTLAND, ORE.—ELEMENTARY PRINCIPALS' ASSOCIATION. (1) W. I. Ford, 2645 N. E. 38th Ave. (2) Roy M. Tate, 1217 S. E. 52nd Ave.

PORTSMOUTH, VA.—SCHOOLMASTERS' CLUB. (1) George B. Ish, 58 Court St. (2) R. O. Edgerton, 322 London St.

POUGHKEEPSIE, N. Y.—MID-HUDSON VALLEY SCHOOLMASTERS' ASSOCIATION. (1) Fox D. Holden, 16 Beechwood Ave. (2) George A. Schiavone, 138 Corlies Ave.

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RALEIGH, N. C.—ELEMENTARY SCHOOL PRINCIPALS' ASSOCIATION. (1) Sallie Blackwell, 311 Vance Apts. (2) Mary Page, 620 W. Jones St.

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SAINT LOUIS, MO.—ELEMENTARY SCHOOL PRINCIPALS' ASSOCIATION. (1) P. H. Hickey, 3632 Lafayette St. (2) E. A. Hood, 2504 Clifton Park Terrace.

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SAN ANTONIO, TEX.—PRINCIPALS' ASSOCIATION. (1) Minnie L. Johnston, 1524 Buena Vista St. (2) Bess Maynahan, 307 S. Pinto St.

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SEATTLE, WASH.—PUGET SOUND SCHOOLMASTERS' CLUB. (1) George W. Scholl, 6056 4th Ave., N. E. (2) Frank Farrar, 4703 11th Ave., N. E.

SHREVEPORT, LA.—PRINCIPALS' CLUB. (1) Mary Bains, Box 248. (2) Mary Dingle, 612 Egan St.

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SPOKANE, WASH.—SCHOOLMASTERS' CLUB. (1) Carl Ferguson, Lewis and Clark High School. (2) C. E. Halverson, Libby Junior High School.

SPOKANE, WASH.—WOMEN PRINCIPALS' CLUB. (1) Isabelle Parker, Villa Nova Apts. (2) Marie Fitzgerald, 1332 S. Division St.

SPRINGFIELD, ILL.—PRINCIPALS' CLUB. (1) J. C. Gannon, 120 W. Grand Ave. (2) E. T. Jackson, 2048 S. 5th St.

SPRINGFIELD, MO.—ELEMENTARY PRINCIPALS' CLUB. (1) Mrs. Elsie M. Elliott, 970 Prospect. (2) Leota Youngblood, 1707 W. Elm.

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WICHITA, KANS.—ELEMENTARY PRINCIPALS' CLUB. (1) W. A. Bonwell, 645 N. Volutsia. (2) Gertrude Hatfield, 410 Ida.

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STATE ELEMENTARY SCHOOL PRINCIPALS ASSOCIATIONS

In the following roster the symbol (1) is used to indicate the person reported as president and (2) is used to indicate the secretary.

ALABAMA—Department of Elementary School Principals. (1) Gordon G. Ford, Colley School, Flat Creek. (2) Hattie Follis, Baker School, Birmingham.

ARKANSAS—Department of Elementary School Principals of the Arkansas Education Association. (1) Ralph B. Jones, Fort Smith. (2) Ethel Wood, Jonesboro.

CALIFORNIA—California Association of Elementary Principals. (1) Harley W. Lyon, Longfellow School, Pasadena. (2) Gertrude G. Howard, George W. Crozier School, Inglewood.

CONNECTICUT—Elementary Principals' Association. (1) Jennie O'Neill, North St., Middlebury. (2) Elizabeth Kirtland, Yalesville.

FLORIDA—Department of Elementary School Principals. (1) Douglas Haygood, Jacksonville. (2) Beulah Beall, Jacksonville.

GEORGIA—Elementary Principals' Club of the Georgia Education Association. (1) Romana Riley, Waters Avenue School, Savannah. (2) Jessie Beard, 1222 Peacock Ave., Columbus.

IDAHO—Elementary Principals' Association. (1) L. C. Matthews, Wilder School, Wilder. (2) Herman Jones, Scism School, Nampa.

IOWA—Elementary Principals of Iowa. (1) Mr. Fitzgerald, Sioux City. (2) Katherine Cooper, Ames.

KANSAS—Kansas Association of Elementary School Principals. (1) E. C. Wine, Longfellow School, Wichita. (2) Margaret Browne, Hotel Kansan, Topeka.

LOUISIANA—Elementary School Department. (1) G. A. Zernott, Marksville. (2) Mrs. Felix Gosselin, Bastrop.

MARYLAND—Elementary Principals' Association. (1) Mrs. Catherine T. Reed, Brentwood. (2) Mae Steig, P. S. No. 88, Baltimore.

MASSACHUSETTS—Massachusetts Elementary Principals' Association. (1) Thomas Kenworthy, Hooker School, Springfield. (2) Sara E. Chase, Washington School, Springfield.

MICHIGAN—Department of Elementary School Principals. (1) Lena M. Fee, John Moore School, Saginaw. (2) Nellie C. Morrison, Kensington School, Grand Rapids.

MINNESOTA—Elementary Principals, Minnesota Education Association. (1) Anne Brezler, Garfield School, Minneapolis. (2) Henry Morgan, Rice School, St. Paul.

NEBRASKA—Nebraska Department of Elementary School Principals. (1) Nell Craig, Belvedere School, Omaha. (2) Angeline Bracken, Druid Hill School, Omaha.

NEW JERSEY—Department of Elementary School Principals of the New Jersey Teachers Association. (1) Mrs. A. Virginia Adams, East Avenue School, Vineland. (2) Federick K. Shield, Fairmont School, Hackensack.

NEW YORK—New York State Association of Elementary Principals. (1) Rollin W. Thompson, Roscoe Conkling School, Utica. (2) Grace E. DeKay, Glen Head School, Glen Head.

OHIO—Department of Elementary School Principals of the Ohio Education Association. (1) Amy Eldridge, Bancroft School, Youngstown. (2) Bertha Bridgman, Byesville.

OKLAHOMA—Elementary School Principals. (1) O. C. Griggs, Whittier School, Tulsa. (2) Mayme Goodin, Muskogee.

OREGON—Department of Elementary Principals of the Oregon State Teachers' Association. (1) Arthur V. Meyers, Salem. (2) Barbara B. Snyder, 7005 N. E. Oregon St., Portland.

PENNSYLVANIA—Elementary School Principals' Section, Pennsylvania State Teachers' Association. (1) Roland T. MacLaren, Williamsport. (2) Samuel Berman, Ludlow School, Philadelphia.

SOUTH CAROLINA—Elementary Principals' Department. (1) Russell Burns, Bethune. (2) Frances Wideman, Greer.

SOUTH DAKOTA—Round Table of the South Dakota Education Association, Elementary School Principals and Supervisors. (1) Anna Fastenan, Spearfish. (2) Leotta Thorpe, Huron.

TEXAS—Elementary School Principals' and Supervisors' Association. (1) S. M. Callaway, Ft. Worth. (2) W. L. Darnell, Austin.

UTAH—Principals' Section, Utah Education Association. (1) Frank S. Allen, 1441 Yale Ave., Salt Lake City. (2) A. J. Arnason, 316 Vermont Bldg., Salt Lake City.

VIRGINIA—Elementary Principals' Department of Virginia Education Association. (1) Lillian M. Johnson, Patrick Henry School, Norfolk. (2) R. O. Bagby, Roanoke City Schools, Roanoke.

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Life Members

Adams, Mrs. A. Virginia, E. Landis Ave., Vineland, N. J.
Becker, Elsa, 1732 E. 4th St., Duluth, Minn.
Berman, Samuel, 5336 N. Sydenham St., Philadelphia, Pa.
Bowen, Wayne F., Box 455, Compton, Calif.
Boyce, Thomas W., Cass Street Rotary School, 1647 N. Cass St., Milwaukee, Wis.
Brown, Edythe J., 230 Bartlett St., South Bend, Ind.
Clark, Norris B., Booker T. Washington School, Newport News, Va.
Clement, Bess, Eliza Clark School, Clarksdale, Miss.
Coleman, Mrs. Ida Fulton, 10334 Tennessee Ave., Los Angeles, Calif.
Cushing, Lena, 27 Fellows St., Danvers, Mass.
Dean, Blanca, Box 330, Rawlins, Wyo.
Dunleavy, Joseph M., 418 Breck St., Scranton, Pa.
Field, Mrs. M. Elizabeth, 1122 Windsor Pl., South Pasadena, Calif.
Floyd, Mrs. Mary L., 1018 Seward St., Los Angeles, Calif.
Flynn, Mary C., Route 2, Box 679, El Monte, Calif.
Gilliam, M. J., 4369 W. Belle Pl., St. Louis, Mo.
Greenberg, Joseph, 449 Second St., Brooklyn, N. Y.
Hammond, Mrs. Gertrude Best, 7316 Crenshaw Blvd., Los Angeles, Calif.
Hansen, Herbert C., 1045 N. Lockwood Ave., Chicago, Ill.
Heacock, A. B., 709 E. Windsor Rd., Glendale, Calif.
Hendricks, Clyde W., 1209 Charlotte Ave., Ft. Wayne, Ind.
Hinrichs, Amy H., 7336 Hurst St., New Orleans, La.
Holmes, Edith M., 2817 Sichel St., Los Angeles, Calif.
Howk, Charles D., 344 Flower St., Pasadena, Calif.
Hubbard, Frank W., Associate Director of Research, National Education Association, Washington, D. C.
Jacobs, R. C. T., 915 Parkview Ave., Dallas, Texas
January, E. L., Box 325, Elmsford, N. Y.
Johnson, Lillian M., 404 Chestnut St., Norfolk, Va.
Kimes, William F., Box 176, Avenal, Calif.
Kline, Aaron, President, Department of Elementary School Principals, 1933-34, Pullman School, 521 E. 113th St., Chicago, Ill.
Laing, Earl R., 16265 Westmoreland Rd., Detroit, Mich.
Lobben, Clara H., 902 Eighth St., N., Fargo, N. D.
Longshore, W. T., Greenwood School, 3711 E. 27th St., Kansas City, Mo.
Lyon, Harley W., 95 N. Sierra Bonita Ave., Pasadena, Calif.
McConnell, Ralph C., Texas Avenue School, Atlantic City, N. J.
McCormick, Elizabeth R., Timothy O. Howe School, Cor. 23rd St., N. and Banks Ave., Superior, Wis.
Mack, Helen A., 417 Prospect St., Alton, Ill.
Mackintosh, Margaret C., 1224 Ditmas Ave., Brooklyn, N. Y.
Marbut, John W., 1140 Mahar St., Wilmington, Calif.
Morgan, Edna, 2943 Berkshire Rd., Cleveland, Ohio
Otto, Henry J., Northwestern University, School of Education, Evanston, Ill.
Peters, Florentine, Garfield School, Chicago Heights, Ill.
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Potter, Floyd A., Massachusetts Avenue School, Atlantic City, N. J.
Rhodes, Maud A., 185 Westminster Dr., N. E., Atlanta, Ga.
Rossman, Mabel A., Washburn School, Duluth, Minn.
Sacks, Solomon, 4827 N. Tenth St., Philadelphia, Pa.
Schroeder, Esther L., Raschig School, Parkway and Elm., Cincinnati, Ohio
Sheffield, Mrs. Frances L., 10 N. Ann St., Mobile, Ala.
Shove, Helen B., 3116 Clinton Ave., S., Minneapolis, Minn.
Stratton, Mason A., 272 Huron Ave., Absecon, N. J.
Smith, Emma O., 335 College St., Macon, Ga.
Swarthout, Walter E., Emerson School, Maywood, Ill.
Troy, Ann A., Park School, Nutley, N. J.
Tucker, Isabel, Shenandoah School, St. Louis, Mo.
VanHorn, F. C., 65 Sherman Ave., Morris Plains, N. J.
Whitworth, Mrs. R. B., Tenth Street School, Atlanta, Ga.
Williams, J. D., 5708 Sixth Ave., S., Birmingham, Ala.
Wilson, Mrs. Flora P., 202 S. Dillard St., Durham, N. C.
Young, Sarah L., 2451 Seminary Ave., Oakland, Calif.
Zook, Carl S., 7200 S. E. 60th Ave., Portland, Ore.

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Brown, Gregory, Jr., 5117 S. Seventh Court, Birmingham
Dodge, Olive J., Board of School Commissioners, Mobile
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Hill, R. Voyt, Martin School, 1201 14th Ave., N., Birmingham
Johnson, Harold B., Fairview School, Birmingham
Jones, Lenore, 1606 Monterey Pl., Mobile
Kegley, T. M., 890 Seventh Pl., W., Birmingham
Lee, Farley, Teachers Training Library, Alabama Polytechnic Institute, Auburn
McLatchy, Gertrude E., 458 Valley Rd., Fairfield
MacMillan, Emma, 120 Cramer Ave., Montgomery
Martin, Ralph, Kennedy School, 125 N. 63rd St., Birmingham
Matzenger, Lena, 1058 Selma St., Mobile
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Moore, Rosa E., 213 W. De Kalb St., Marion
Murphree, Mrs. Myra B., Prattville
Norton, H. B., Robinson School, 8400 First Ave., S., Birmingham
Orr, J. C., Lakeview School, Birmingham
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Snoddy, W. T., Acipco School, 1716 N. 31st St., Birmingham
Southerland, R. H., County Supt. of Schools, Livingston
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ARIZONA

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Carlisle, O. L., Grammar School, Somerton
Eubank, George W., Ft. Defiance
Keen, Julia C., 1905 Fourth St., Tucson
Kessler, R. V., Menlo Park School, Tucson
Kohn, Frederick A., Box 426, Casa Grande
McKinney, Willie, 314 W. Aspinwall, Winslow
Robertson, Ellen, 828 E. Fifth St., Tucson
Scott, Esther C., Box 1944, Coolidge
Sullivan, W. R., Public Schools, Palo Verde
Sundquist, Ada M., 715 Merritt St., Miami
Tacquard, Mrs. Anna, 2239 E. First St., Tucson
Thomas, John Q., Supt. of Schools, Flagstaff
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Wivel, C. B., 33 E. Eighth St., Tempe

ARKANSAS

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Conte, Mrs. Lelia M., Route 1, Hot Springs
Durham, Louise, Public School, Mena
Evans, Bessie, 1005 McGowan St., Little Rock
Haraway, Fannie, Jefferson School, Helena
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Kuykendall, Ivah, Public School, Conway
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Webb, Victor L., 1514 W. 20th, Little Rock
Williams, Mollie, Belle Point School, Ft. Smith
Woods, Ethel, 1205 Madison St., Jonesboro

CALIFORNIA

Abbott, Robert B., 704 Brown Ave., Fresno
Adams, Mrs. Ida James, Public School, Olive View
Addicott, Irwin Oliver, Lincoln Elementary School, B and Mono Sts., Fresno
Alexander, Mertie, Glenfeliz Boulevard School, Los Angeles
Alexander, Roxie E., 920 Virginia St., Vallejo
Allen, Robert H., Route 1, Box 1, Lathrop
Andersen, Lora M., Route 1, Box 359, Selma
Anderson, Emma C., 7830 S. Harvard Blvd., Los Angeles
Andreen, Earl P., Alexander Hamilton School, 2807 Fairmount Ave., San Diego
Andrews, Mary A., 810 S. Ross St., Santa Ana
Arnold, David Ray, Box J-1, Avalon
Ashton, Adelene, Box K, Oilfields
Atterbury, Lydia, 2656 LeConte Ave., Berkeley
Aultman, Mrs. Lela W., 6161 Barrows Dr., Los Angeles
Axtelle, George E., 1206 Hollywood St., Oakland
Badger, Abner A., 510 Paseo Del Mar, San Pedro
Badour, Mrs. Eleanor, 1751 N. Verdugo Rd., Glendale
Bailie, Mrs. Lorraine, 4316½ Los Feliz Blvd., Los Angeles
Baker, Alfred E., 6149 Hill Rd., Oakland
Baker, Ethel I., R. F. D. 4, Box 4630, Sacramento
Baker, H. M., Route 4, Box 460, Bakersfield
Ball, E. E., 2933 Iowa, Fresno
Banta, Mrs. Edythe R., Grant School, 29th and Summitt St., Oakland
Barber, Mrs. M. Ellen C., 1156 22nd St., San Diego
Bardarson, Otto W., Sunset School, Box 1701, Carmel
Barnard, Nora Margaret, Malabar School, 3200 Malabar St., Los Angeles
Barnes, Mrs. Jessie Baldwin, Horace Mann School, Long Beach
Bartlett, Louise, Bret Harte School, Sacramento
Bates, Elizabeth, 365 S. Highland Ave., Los Angeles
Baxter, Bernice, 25 Blair Ave., Piedmont
Beach, Rachel Ann, Farmdale School, 2911 Eastern Ave., Los Angeles
Beal, Vio Ross, Meyler Street School, 203 N. Meyler St., San Pedro
Bedford, Rowena, Box 61, Route 2, Redlands
Benner, W. A. 1670 Grand Ave., Piedmont
Benson, Albert N., Hawthorne School, Oakland
Berard, Elvina L., 434 Wawona St., San Francisco
Bernard, Lloyd D., State Teachers College, Chico
Berry, Bertha Irene, 1261 S. Mariposa St., Glendale
Biffer, Mary C., 1253 W. Fifth St., Los Angeles
Bigelow, Vesta, 1616 Lake St., Glendale
Billups, Lillian H. B., 847 Levering Ave., West Los Angeles
Blakemore, Edith E., 1030 W. Second St., Pomona
Blend, Frances, 5455 Fifth Ave., Los Angeles
Blodget, Mrs. Viola, 2000 Baker St., Bakersfield
Board, Mrs. Lorraine, 1844 Bel Aire Dr., Glendale
Boehncke, Frieda C., 1320 N. Wilton Pl., Hollywood
Boettcher, Nita Toney, 9701 Victoria Ave., South Gate
Borden, Mary G., John Muir School, Modesto
Borden, Nellie G., 2219 San Joaquin St., Fresno
Bowman, Robert, Melrose School, Oakland
Bowman, Samuel H., 6917 Converse Ave., Los Angeles
Bowring, H. F., 133 High St., Modesto
Boyer, Mrs. Edith, 3333 Altura, La Crescenta
Bradley, Anne M., 412 63rd St., Oakland
Brauer, Robert E., Route 1, Box 292, Dinuba
Breen, Mrs. Arminta M., Brooklyn Avenue School, 4644 Brooklyn Ave., Los Angeles

Breen, Ellen R., 1067 Lincoln Ave., San Diego
Brems, Edna M., 3558 Sixth St., San Diego
Brinn, Mrs. Vera L., E. California, Glendale
Briscoe, William S., 3944 Oakmore Rd., Oakland
Brolliar, Emery, 2188 Third Ave., Sacramento
Brown, Bessie Olive, 4053 Irving Pl., Culver City
Brubaker, D. E., 2320 Greenfield Ave., West Los Angeles
Buckalew, Harry L., Jefferson School, Fresno
Bullis, Mrs. Luella, 821 W. Mountain, Glendale
Burkhard, William J., Coloma School, Sacramento
Burton, Katherine, 10358 Commerce Ave., Tujunga
Butzine, Fred C., Elementary School, Encanto
Cadres, Clara E., 2697 Arrowhead Ave., San Bernardino
Calder, Jessie, Burckhalter School, 3956 Burckhalter Ave., Oakland
Callahan, Mrs. Stella M. H., Mayflower School, Monrovia
Campbell, Florilla, 825 N. Baker St., Stockton
Cardozo, Truman V., Box 396, Riverbank
Carey, Katharine L., 727 Chamber of Commerce Bldg., Los Angeles
Carroll, Hazel I., 14726 Dickens St., Van Nuys
Carter, C. C., Box 58, Calwa City
Cartwright, Royden M., Rosewood Avenue School, 503 N. Croft Ave., Los Angeles
Catlin, Ruby, Lincoln School, Kingsburg
Chamberlain, Clarence W., 420 N. Murray St., Banning
Chandler, Mrs. Myrtle B., 1234¾ W. Fifth St., Los Angeles
Chapin, Alice, Speech Correction School, 733 Chamber of Commerce, Los Angeles
Chase, Ethel E., 912 S. Chevy Chase, Glendale
Christensen, Serena P., 661½ N. Berendo St., Los Angeles
Clarke, Helen Frances, 2030 Selby Ave., West Los Angeles
Claypool, Mary F., 2411 Marvin Ave., Los Angeles
Clayton, Mrs. Rose C., Marguerita School, 1603 S. Marguerita, Alhambra
Cleaver, Ruby, 244 Monterey Rd., South Pasadena
Clemens, K. F., Box 25 Wasco
Clifford, Charles A., Seventy-ninth Street School, Los Angeles
Cobb, D. F., Thomas A. Edison School, Pasadena
Coffey, Julia C., Emerson School, San Francisco
Cokeley, J. W., Jr., 505 E. Live Oak St., San Gabriel
Colerick, Mrs. Mabel S., 1633 E. 103rd Pl., Los Angeles
Colestock, Grace B., 133 S. Almont Dr., Los Angeles
Colestock, Mary A., 5011 Baltimore St., Los Angeles
Compton, John L., Washington School, Bakersfield
Connor, Edith A., 5121 Brynhurst Ave., Los Angeles
Cookman, Mrs. Grace Olive, 618 W. 49th St., Los Angeles
Cornwell, L. May, 501 E. Acacia, Glendale
Correll, Vincent I., Ulysses S. Grant School, Long Beach
Cotter, M. Elsie, Lazear School, Oakland
Couchman, H. H., 717 W. 80th St., Los Angeles
Cowan, Estella A., Griffin Avenue School, Los Angeles
Cowan, Rose E., 200 N. Rampart Blvd., Los Angeles
Craig, Mary D. S., Westminster Avenue School, Los Angeles
Crandall, Jessie M., Aragon Avenue School, 1118 Aragon Ave., Los Angeles
Crane, Clarence B., 1546 La Loma Ave., Berkeley
Crane, R. L., Jr., Dist. Supt. of Schools, 344 Santa Barbara Ave., Daly City
Crapser, Jessamine, 1828 S. Mansfield Ave., Los Angeles
Crase, Mrs. Drucie G., 1033 Clarendon Crescent, Oakland
Crawford, Bertha T., 1008 E. Santa Barbara Ave., Los Angeles
Crawford, Lawrence T., College Elementary School, State Teachers College, Chico
Croad, J. R., Sierra School, Sacramento
Crowley, Mrs. Viola W., Box 222, Canoga Park, Los Angeles
Culter, Edith M., Route 1, Box 446, Orange
Culver, Harriett E., 1717 Seventh Ave., Los Angeles
Curley, Laura, 1121 Trestle Glen Rd., Oakland
Curtis, Lawrence C., Jefferson Union School, Lawrence
Curtiss, Mrs. Anna L., 440 S. Pacific, Glendale
Davis, Barney J., Union School, Lakeport
Davis, N. Evelyn, 636 Chestnut Ave., Long Beach
Davis, Mrs. Vivien Klene, John Muir School, 15th and Pacific, Long Beach
Day, Mrs. Mylitta Morris, 87 Humphrey Rd., Santa Barbara
Delmet, Don Thomas, 820 Walnut St., Norwalk
Dermody, Louise C., Third Street School, Los Angeles
Desmond, Lucile H., Pershing School, Madera
Des Roches, Pauline, 1323 Woolsey St., San Francisco
Douglass, Sherman, 6515 Middleton St., Huntington Park
Drake, Ethelda, 3800 Pasadena Ave., Los Angeles
Dreier, Mrs. Grace M. Mogle, 2132 W. 74th St., Los Angeles
Dust, Gertrude, San Rafael School, 2303 Broadway, Los Angeles
Eads, Evelyn, 11659 Foothill Blvd, San Fernando
Edgecomb, George, Wadsworth Street School, 1025 E. 38th St., Los Angeles
Elledge, Mrs. Gladys Rodda, 1817 Holmby Ave., West Los Angeles
Elmwood, Roby T., 201 S. Chapel St., Alhambra
Enfield, Celesta Gertrude, Fairburn Avenue School, 1403 Fairburn Ave., West Los Angeles
Enfield, O. D., Eastman Street School, 1200 Eastman St., Los Angeles
Ensign, Olive Leona, 3736 Arlington, Los Angeles
Eskey, Nettie Dagley, 11532 Hartsook Ave., N., Hollywood
Estes, Charlotte, 2420 Gough St., San Francisco
Fanning, W. E., 219 S. Madrona Ave., Brea
Farrington, Mrs. Rae Lee, 795 S. Grand Ave., Pasadena
Feazell, Ruby Caroline, 29 Eureka St., Pasadena
Fellows, Millie B., 21921 Valerio St., Canoga Park, Los Angeles

Fikes, Edith E., 472 Ocean St., Santa Cruz
Fillmore, Horace F., Vernon City School, 2360 E. Vernon Ave., Los Angeles
Finchy, Katherine, Desert School, Palm Springs
Finney, Grace E., 1919 W. 21st St., Los Angeles
Finney, J. J., Crystal School, Suisun
Flewelling, Mrs. L. M. 114 E. Cerritos, Glendale
Foshay, M. Amelia, 2055 W. 24th St., Los Angeles
Fraser, Jessie M., 716 Columbia Ave., Los Angeles
Fratis, Mrs. Sue L., 204 Wayne Ave., Oakland
Fuller, Grace M., 1365 Lucerne, Fresno
Fulwider, Alice Ethel, Terminal School, 324 Ocean Ave., Terminal Island
Gamble, Mrs. Leo M., 3838 S. Hobart Blvd., Los Angeles
Gardner, Elizabeth M., 618 Paseo Del Mar, San Pedro
Gates, Earl E., Box 344, Loomis
Gearhardt, Jessie M., Loretto Street School, 3408 Arroyo Seco Ave., Los Angeles
George, Edna, 1409 W. 37th St., Los Angeles
Gibson, Robert E., Dist. Supt. of Schools, Walnut Creek
Gilbert, Edith M., Fremont School, 2429 Poinsetta St., Santa Ana
Gist, Arthur S., Pres., Humboldt State Teachers College, Arcata
Glenn, Maude, 55 N. Meredith Ave., Pasadena
Glenn, Ray F., 824 18th St., San Bernardino
Glissman, Henrietta M., 136 S. Commonwealth, Los Angeles
Glover, Mrs. Percy F., Fremont School, Fourth and Termino Ave., Long Beach
Graf, Louise, 2136 W. 28th St., Los Angeles
Graham, R. J., 818 Spruce St., Berkeley
Gray, Avery J., 505 Braun Bldg., Los Angeles
Greene, Lucy B., 418 Jefferson Ave., Pomona
Grimsley, V. H., 2150 47th Ave., Oakland
Grover, C. C., 610 E. 19th St., Oakland
Hale, George N., Dist. Supt. of Schools, Bloomington
Hall, Lee Roy, 175 S. Greenwood Ave., Pasadena
Hamer, Joseph W., 1050 S. Gramercy Dr., Los Angeles
Hamilton, Nell, 1344 Glenn, Fresno
Hamm, Max, 5961 Buena Vista Ave., Oakland
Hammatt, Hattie, John Muir School, Fresno
Hammel, Julius C., 842 E. 19th St., Oakland
Hammond, Ida M., 2409 E. 27th St., Oakland
Hanson, Velma, Box 64, Upper Lake
Harding, Ruth Clarke, Roosevelt School, Bakersfield
Hardman, Bess, 346 E. 51st St., Los Angeles
Harris, Maude K., 1612 Huntington Dr., South Pasadena
Hartshorn, Edna, 1011 W. 70th St., Los Angeles
Hauselt, Elizabeth E., 2199 California St., San Francisco
Haw, Harry Huber, 1413 Golden Gate Dr., San Diego
Hayes, C. K., 931 Fresno Ave., Berkeley
Hayward, Mrs. Lucy M., 3521 E. First St., Long Beach
Heisser, Della B., Dist. Supt. of Schools, Turlock
Helback, Merle, 1307 Lagoon Ave., Wilmington
Helm, Mrs. Florence G., Fifty-Fourth Street School, 5501 Eileen St., Los Angeles
Helms, W. T., Supt. of Schools, Richmond
Henderson, Adin D., 2533 39th St., Sacramento
Hendrick, Orra Leta, 2129 S. Alsace Ave., Los Angeles
Hewitt, Mrs. Ida F., 2653 Menlo Ave., Los Angeles
Higgins, Ethel L., Box 142, Atascadero
Hill, Beulah P., 4350 Ramona Blvd., Los Angeles
Hoffman, Mrs. Howardine G., 392 Riverside Dr., Chino
Holleran, Nora, 1846 Crenshaw Blvd., Los Angeles
Hollowell, Hazel, Ritter School, 11109 S. Alameda Blvd., Los Angeles
Homan, Rose, 1633 College Ave., Fresno
Hooker, Ora Whitley, 947 W. 30th St., Los Angeles
Hopkins, Clarence G., 5139 Argus Dr., Los Angeles
Houston, Edith L., 790 Calmar Ave., Oakland
Howard, Mrs. Gertrude G., 227 W. Hillcrest St., Inglewood
Huckaby, Mrs. Chloe Poynor, 516 S. Eucalyptus Ave., Inglewood
Hudspeth, C. E., Washington School, Oakland
Hughes, Mrs. Mary E., 847 Campus Way, San Bernardino
Hummel, L. G., 235 E. Fourth St., National City
Huntington, Henriette L., 1206 O St., Sacramento
Huntoon, Mrs. Georgie K. Miller, 1017 Browning Blvd., Los Angeles
Hurley, M. E., 3144 Claremont Ave., Berkeley
Hymer, Evangeline, 5303 Agnes Ave., North Hollywood
Ingraham, Mrs. Jessie E., 1437 Bond St., Los Angeles
Irwin, Kathryn, 322 Seventh St., Antioch
Iversen, Ida Christine, 349 N. Wilton Pl., Los Angeles
Jensen, Elsie M., Glassell Park School, Los Angeles
Johns, Charles L., 7004 Marconi, Huntington Park
Johnson, Mrs. Ethel S., 600 37th St., Sacramento
Johnson, Frank R., Supt. of Schools, Guadalupe
Johnson, Henrietta, 285 Van Buren, Oakland
Johnson, Kenneth H., 1130 Justin St., Glendale
Johnson, Mrs. Lois E., 230 Sixth St., Pacific Grove
Johnson, V. Bernard, P. O. Box 338, Pleasanton
Jones, Clara E., 5905 Lillian St., Los Angeles
Jones, Elizabeth A., Marianna Avenue School, 4200 E. First St., Los Angeles
Jones, Hattie E., 2439 Mariposa, Fresno
Kelly, Florence M., Fries Avenue School, 1301 Fries Ave., Wilmington
Kelly, Mrs. Irene E., 1500 Sutter St., San Francisco
Kelly, Julia M., 1801 New Jersey St., Los Angeles
Kendall, Joseph L., 856 N. Doheny Dr., West Los Angeles
Kendig, William, Public School, Etiwanda
Kilton, Inez G., 1140 E. First St., Long Beach

Kizer, K. B., 549 Channing Ave., Palo Alto
Klaus, Bertha J., 240 Downey St., San Francisco
Knowles, Marianetta, 229 Ave. G., Redondo Beach
Kottinger, E. W., Durant School, Oakland
Krebs, Grace Edith, Remsen Street School, 9954 Remsen St., Roscoe
Kretsinger, R. W., 3050 55th Ave., Oakland
Kyte, George C., Haviland Hall, University of California, Berkeley
Lander, Aga D., 1205 Ferry St., Martinez
Lages, Dora, 311 Lester Ave., Oakland
Lawrence, Mabel M., 619 N. Ave. 56, Los Angeles
Le Chien, Elizabeth, 642 N. Newlin Ave., Whittier
Lenvig, Bessie C., 117 N. Ave. 55, Los Angeles
Lighton, Bertha B., Glen Alta School, 3410 Sierra St., Los Angeles
Loofbourrow, Mr., University Elementary School, Berkeley
Love, M. Lily, 15 Paloma Ave., Ingleside Terraces, San Francisco
Lucas, Mrs. Blanche, Elementary School, Dos Palos
McCleish, Nellie, 3722 Elmwood Court, Riverside
McClure, Martha, Public School, Reseda
McDonald, George J., Twenty-eighth Street School, 2807 Stanford Ave., Los Angeles
McEachin, Mary W., 605 N. Boyle Ave., Los Angeles
McGinley, Ethel, Box 840, Eureka
McGorray, William E., 117 S. Mountain View Ave., Los Angeles
McGraw, Mrs. Margaret A. F., 6351 Olympic Blvd., Los Angeles
McGuffin, James A., Route 1, Box 416-A, Fresno
McMaster, J. F., 347 W. Garfield, Glendale
McMurray, Vera Elena, Elysian Heights School, 1562 Baxter St., Los Angeles
McNamara, Mrs. Clare, 1734 D St., Bakersfield
Mack, Mrs. A. C., Lincoln School, Bakersfield
MacMillan, Jean, Ramona School, 1100 N. Normandie Ave., Los Angeles
Magaw, William J., 5365 Huntington Dr., Los Angeles
Maguire, S. Edna, 141 Corte Madera Ave., Mill Valley
Maland, Mrs. Emma W., 769 Page St., San Francisco
Manley, Edna T. H., 1049 S. Mansfield, Los Angeles
Marchant, Maud, 400 Montclair Ave., Oakland
Martin, Paul, 2635 Rawson St., Oakland
Maxwell, Mrs. Hazel M., 624 S. Main St., Santa Ana
May, Hilda, 754 Third Ave., San Francisco
Meeks, Ida V., 1252 14th St., San Diego
Meyer, Mrs. Laura H., 1661 Crescent Heights Blvd., Los Angeles
Michaelis, Harriet, 8451 Towne Ave., Los Angeles
Miller, Douglas B., Maxwell Park School, Oakland
Mishler, Grace M., 577 E. Pasadena St., Pomona
Mock, Thomas M., Horace Mann School, 128 S. Arnaz, Beverly Hills
Molony, Mrs. Edith, 232 N. Altmont Dr., Beverly Hills
Montgomery, Lois J., 1108 Paloma Ave., Burlingame
Mooney, Frances A. C., Hawthorne School, Shotwell and 22nd Sts., San Francisco
Morrison, Daisy P., Heliotrope School, 4800 E. Slauson, Maywood
Morrison, Mrs. Isabelle W. C., 14615 Magnolia Blvd., Van Nuys
Mount, Mrs. Florence D., 625 E. Lomita Ave., Glendale
Munce, Tillie Carolyn, 14 Glenn Ave., Fresno
Nagle, Mary I., Toland Way School, 4545 Toland Way, Los Angeles
Nelson, Ada S., Dist. Supt. of Schools, Box 215, Los Nietos
Nelson, H. G., 525 S. Ross, Santa Ana
Nelson, Myra Banta, Hooper Avenue School, 5123 Hooper Ave., Los Angeles
Netz, Joseph, 2311 Tenth Ave., Los Angeles
Newman, Mrs. Ethel B., 2214 Ocean View Ave., Los Angeles
Nichols, Roy T., 1014 Everett Ave., Oakland
Noble, Mary Agnes, Stanford Avenue School, 9325 Stanford Ave., South Gate
O'Bannon, Mary B., 137 Ardmore Rd., Berkeley
Olinder, Mrs. Selma B., 108 N. Third St., San Jose
Olson, Oscar Henry, 1452 Vancouver Ave., Burlingame
Orr, Jane C., Ninty-second Street School, 9211 Grape St., Watts
Orth, Fred W., 2031 Arlington Ave., Los Angeles
Outcalt, Mrs. Adele M., 925 Robinson St., San Diego
Owen, William E., 1166 W. Harding Way, Stockton
Paine, Mae L., 131 W. Ave. 42, Los Angeles
Parker, Bertha Mae, John Muir School, Santa Monica
Patten, A. P., Roosevelt School, Modesto
Patten, Mrs. Mina S., 905 Hickory St., Compton
Peck, Mrs. Kathryn H., McKinley School, Santa Monica
Peddie, Mrs. Gertrude W., 4725 Victoria Ave., Los Angeles
Perryman, Bertha, 1033 Windsor Blvd., Los Angeles
Peters, W. J., Hester School, San Jose
Philippi, Carl, 1549 Micheltorena St., Los Angeles
Phoenix, Hattie B., 329 W. Micheltorena St., Santa Barbara
Pitkin, Mrs. Virginia R., 411 S. Occidental Blvd., Los Angeles
Plagemann, Dora E., 1369 Hyde St., San Francisco
Pollich, Raymond Elliott, Grant School, Hollywood
Poore, Margaret I., 7516 Outlook Ave., Oakland
Poulsen, Esther R., 1823 Grand Ave., Santa Barbara
Preston, C. W., Eagle Rock School, Los Angeles
Pullis, Mrs. Jessica K., 712 Orange Grove Ave., South Pasadena
Pursell, Arthur L., 738 E. King St., Tulare
Quick, C. F., 125 Claremont Ave., Long Beach
Racek, Mrs. Josephine W., 530 California Ave., Venice
Rasmussen, Mrs. Eva Hale, Box 714, Auburn
Rector, W. G., 5957 Chabolyn Ter., Oakland
Redden, Albert, 8668 Evergreen Ave., South Gate
Reinke, Gertrude H., 5063 Floriston Ave., Los Angeles

Renshaw, Elizabeth, 211 S. Kroeger, Anaheim
Reynolds, Mrs. Christine Marsh, 5657 Meridian St., Los Angeles
Rice, Jenne W., 815 Ocean Ave., Santa Monica
Richards, Marcella, 1764 W. Washington St., Los Angeles
Riese, Ella L., 8628 San Gabriel Ave., South Gate, Los Angeles
Riggins, Mrs. Mildred E., 3670 S. Raymond Ave., Los Angeles
Ritchie, Georgina D., Corona Avenue School, 3825 Bell Ave., Bell
Ritchie, Mary LeVan, Hoover Street School, 867 S. Hoover St., Los Angeles
Roberts, Bertha, 2151 California St., San Francisco
Roberts, Eulia S., 10325 Orton Ave., Los Angeles
Roberts, Grace L., Morningside School, San Fernando
Rose, Jennie, 1427 S. Mansfield Ave., Los Angeles
Roth, Minnie J., 1625 O St., Sacramento
Rowell, Mary Grace, 271 S. Oak Knoll, Pasadena
Rusling, Mrs. Cora S., 4416 S. Normandie Ave., Los Angeles
Ruth, Clarence, Dist. Supt. of Schools, Lompoc
Saxton, M. Emma, 1015½ Virginia Pl., Glendale
Saylor, Margaret F., 1151 W. 109th St., Los Angeles
Scalapino, William, 1315 Alta Vista Rd., Santa Barbara
Scharf, Mrs. Eva Pearl, 834 Nowita Pl., Venice
Schultz, Henriette M., 412 N. Granada, Alhambra
Scudder, Agnes C., 6101 Rimpau Blvd., Los Angeles
Seavey, Josephine, 2300 Van Ness Ave., San Francisco
Sessions, Herbert Alanson, 123 W. Ivy St., Hanford
Shafer, Paul F., 647 165th St., Gardena
Sheldon, Mrs. Inez T., Public School, Ojai
Shepard, Anne Loomis, 1490 Colorado Blvd., Los Angeles
Silvia, J. Defray, 319 W. Ortega, Santa Barbara
Singletary, Mattie S., 4296 Orange St., Riverside
Sletten, Theresa C., 933 Lincoln Blvd., Santa Monica
Smith, Agnes L., 216 Olive St., Huntington Beach
Smith, Effie E., 1436 Chapin Ave., Burlingame
Smith, F. B., John Muir School, Sacramento
Smith, Leslie G., 2511 College Ave., Berkeley
Smith, Lucile, 1118 W. 41st Pl., Los Angeles
Smith, Margaret H., 3840 S. Grand Ave., Los Angeles
Smith, Marion C., LeConte School, Berkeley
Smith, Mollie A., 2274 Virginia St., Berkeley
Smith, Rose M., Tenth Street School, 1000 Grattan St., Los Angeles
Snow, Irene, 2270 Main St., Napa
Snyder, Peter H., 3844 Belmont Ave., San Diego
Snyder, R. W., 546 Rosal Ave., Oakland
Soelberg, John, Stonehurst School, Oakland
Spencer, Mrs. Hattie A., Hotel Mt. Lassen, Susanville
Starr, A. G., 2126 St. Jarlath's Ave., Oakland
Stearns, Oletha, 1524 Martel Ave., Hollywood
Steelhead, Bert F., 523 Clement Dr., Glendale
Sterry, Nora, Sawtelle Boulevard School, 1727 Sawtelle Blvd. W., Los Angeles
Stewart, Hugh B., P. O. Box 26, Arcata
Stolz, Rose C., Richelieu Hotel, 1040 Van Ness St., San Francisco
Stopher, Mrs. Grace, 347 Eighth St., San Bernardino
Stout, I. M., Grammar School, Lancaster
Stull, Helene M., 925 N. Hayworth Ave., Los Angeles
Tardelli, Agnes R., Sherman School, Union and Franklin Sts., San Francisco
Taylor, Leo E., Lafayette School, Oakland
Tessmer, Etta H., 618 Girard St., San Francisco
Thomas, Carl Dane, 1217 S. Genessee St., Los Angeles
Thompson, Mrs. Myrtle S., 260 Orange St., San Bernardino
Thompson, Mrs. Rose V., Playa Del Rey School, Venice
Thorne, Maude Bowers, Staunton Avenue School, 1656 Staunton Ave., Los Angeles
Thornquist, Mrs. Marie H., 339 N. Harvard Blvd., Los Angeles
Thurston, I. P., 600 S. Rowan Ave., Los Angeles
Tibbetts, Mrs. Alice B., 3355 Canfield Ave., Los Angeles
Tillman, Florence, 2725 Prince St., Berkeley
Tingley, Grace W., 360 S. West Lake, Hollywood
Tudbury, Ethel W., 1891 San Juan Ave., Berkeley
Turner, Elsie V. M., 1117 15th St., Modesto
Turner, Grace M., Albion School, 220 S. Ave. 18, Los Angeles
Upton, Anne Hale, 1625 W. 47th St., Los Angeles
Van De Goorberg, Wilhelmina, 1606 N. Ave. 55, Los Angeles
Van De Mark, Mrs. Della A., Lakeview School, Oakland
Vandyke, Mrs. Edna S., 10635 Putney Rd., West Los Angeles
VanNatta, Mrs. Esther, 1211 Wilson Ave., Fresno
Vans, Mrs. Oda Beardsley, 1536 W. 46th St., Los Angeles
Vineyard, Julia Marie, 1933 Third Ave., Los Angeles
Vogelsang, Dorothy, 1700 Vallejo St., San Francisco
Voiles, Mrs. Stephenia Hill, 1734 N. Mariposa Ave., Hollywood
VonHatten, Emma A., 1017 30th St., Sacramento
Wacaser, Mrs. Helen, 4962 Iowa, Fresno
Wagner, Olive E., 409 W. Bishop St., Santa Ana
Walker, Stephen, 2425 Fresno St., Fresno
Wallace, Maude, 374 Hanover Ave., Oakland
Walter, Robert Bruce, 524 DeSales St., San Gabriel
Walton, C. Leroy, Box 58, Caruthers
Walton, Miles P., 801 Center St., Manhattan Beach
Ward, Charles W., 321 W. Lomita Ave., Glendale
Ward, Susie A., 198 Hancock St., San Francisco
Waters, Sylvia, 901 D St., San Bernardino
Weakley, Guy A., Box 219, El Centro
Webster, Mrs. Barbara Miller, 716 Virginia Ter., Santa Paula
Webster, Mrs. Mae V., 754 Chatsworth Dr., San Fernando

Weiser, Anna E., Box 263, Bakersfield
Weller, Louise E., Benjamin Franklin School, 4427 Copeland Ave., San Diego
Wells, Verna E., 924 Halladay St., Santa Ana
Wemken, Nellie Opal, 1321 Cortez St., Los Angeles
Westerhouse, E. E., 15 Forest, Arcadia
Whitaker, Forrest, 4865 Riggins Ave., Los Angeles
Wickersham, Jessie B., 732 Cabrillo Ave., San Pedro
Widemann, Grace V., Box 134, Gonzales
Wienke, Helen May, Lafayette School, Fresno
Wilhelmy, George Max, Sunnyvale
Williams, Mrs. Clara Martin, 1322 N. Highland Ave., Los Angeles
Wilson, Mrs. Ethel C., 29 N. Third St., Alhambra
Winters, Louise R. V., Norwood Street School, 1975 Norwood St., Los Angeles
Wisler, Mrs. Emma C., 6542 Bella Vista Way, Los Angeles
Witman, Ann M., 1936 Orchard Ave., Glendale
Witman, Elizabeth H., South Park Avenue School, 455 E. Manchester Ave., Los Angeles
Wonders, Winifred M., 1459-A E. Third St., Long Beach
Wood, Thomas P., 3028 Hill St., Huntington Park
Wright, Helen R., Fremont School, Santa Rosa
Young, D. M., 1449 Lincoln St., Kingsburg
Young, George Arthur, 5722 Meridian St., Los Angeles
Zimmerman, Bruce, Longfellow School, Berkeley
Zimmerman, F. B., 3245 Flagg Ave., Oakland

COLORADO

Barkley, Dell, Lake View School, Dist. No. 20, Pueblo
Bennett, Aubrey, 1650 Locust St., Denver
Bland, Rose, 627 N. Nevada Ave., Colorado Springs
Boyer, Monta J., Alameda School, W. Byers Pl. and S. Bannock St., Denver
Buck, Nellie M., 133 W. Fourth St., Salida
Combs, Ethel L., 2923 W. 28th Ave., Denver
Cordingly, Elizabeth, Thatcher School, Denver
Cornish, Lydia R., Evans School, W. 11th Ave. and Acoma, Denver
Doble, Flora I., Sherman School, Second Ave. and Grant St., Denver
Doull, Frances, Ashland School, Denver
Eagleton, W. H., Eagleton School, 845 Hazel Court, Denver
Erb, Edith M., 2870 Raleigh, Denver
Evans, Dave D., 2538 Elm St., Denver
Eyer, Myrtle, Corona School, Pueblo
Fitzpatrick, Jessie K., 936 Mapleton Ave., Boulder
Force, Anna Laura, Lake Junior High School, Denver
Forsyth, Bessie M., 537 Bross St., Longmont
Gard, Clara F., Fairview School, 11th and Decatur St., Denver
Godsman, Mrs. Charlotte J., Montclair School, 13th and Quebec St., Denver
Gruenler, Arthur M., 1237 Clermont St., Denver
Herrington, Eugene H., 4646 W. 31st Ave., Denver
Holmes, Ethel, 2610 S. Sherman St., Denver
Johnson, C. T., Hinsdale School, Seventh and Grand, Pueblo
Keller, Elizabeth M., 1540 Grant St., Denver
Ketner, Sarah P., Washington Park School, Mississippi Ave. and S. Race St., Denver
Kirkwood, Helen G., Ivywild School, Colorado Springs
Klein, Louise, 712 Harrison St., Denver
Lind, Nellie V., Stedman School, 30th and Dexter St., Denver
McKay, Mrs. Edna A., 728 State St., Ft. Morgan
McMeen, George M., Swansea School, 46th Ave. and Columbine St., Denver
Morton, Max D., Thatcher School, Pueblo
Noar, Frances, Smedley School, Denver
Noce, Lillian, Webster School, W. 36th and Lipan St., Denver
O'Boyle, Lila M., 829 Fillmore, Denver
Plumb, Mae A., 329 Bross St., Longmont
Queree, Pearl, 2914 W. 29th Ave., Denver
Remick, Nellie A., Acacia Hotel, Colorado Springs
Ricketts, Blanche, 522 Arapahoe Ave., Boulder
Rishel, John B., Barnum School, Denver
Romick, Nelle, Columbine School, Columbine and 28th, Denver
Shute, William C., 2651 Vine St., Denver
Simpson, Genevieve, 736 Race, Denver
Slavens, Leon E., 707 E. Tenth Ave., Denver
Smith, Luna I., 1513 Ninth Ave., Greeley
Smith, Mrs. Margaret M., Ebert School, Denver
Strack, Caroline, 216 E. Routt, Pueblo
Swanzey, Linah, Bessemer School, Pueblo
Sweet, Mayme, 636 York, Denver
Watts, Lillie E., Asbury School, S. Marion and Asbury, Denver
Weymouth, Edith, Fairmont School, Denver
Wheatly, George, Rosedale School, Denver
White, Mrs. Julia M., Steele School, S. Marion and Almeda Ave., Denver
Wiley, Gilbert S., 2140 S. Clayton St., Denver
Zirkle, H. W., 357 Lincoln St., Denver

CONNECTICUT

Adams, Dorothy R., Long Lots Rd., Westport
Allen, Elizabeth, 516 Columbus Ave., New Haven
Anderson, May F., Holmes School, Darien
Baker, Frances E., South Grammar School, East Hartford
Baldwin, Lillian, Honeyspot School, Stratford
Barnes, Percival S., Supt. of Schools, East Hartford
Barry, Lena F., Barnum School, Noble Ave., Bridgeport
Bennett, Ada Gray, 2671 Main St., Bridgeport
Bestick, Grace V., 229 Wells St., Bridgeport
Blackham, Florence E., 303 E. Main St., Bridgeport
Blackmer, Victor A., 64 North St., Danbury
Brennan, Katharine A., 182 Lloyd St., New Haven
Bridgett, Alice E., Colony Street School, Wallingford
Burnap, R. S., Central Grammar School, Milford
Carrington, Ralph W., Bunker Hill School, Waterbury

Condon, Anna A., 74 Garden St., Stamford
Cowan, Elizabeth S., 134 Highland Ave., Waterbury
Desmond, D. Giles, Box 94, Tariffville
Fagan, Anna E., 1167 E. Main St., Waterbury
Fisher, Annie, 162 Blue Hill Ave., Hartford
Freeman, Edward S., 34 Powell Pl., Stamford
Fuller, Nellie P., 1 Fuller St., New London
Hart, Harry T., Stevens School, Stamford
Hayes, Josephine A., 624 Orange St., New Haven
Holroyd, Ida G., 33 Dora Circle, Bridgeport
Jourdan, Caroline C., 102 W. Main St., Branford
Keefe, E. Mae, 50 Spencer Ave., Waterbury
Kelley, Maude S., 17 Atwater St., New Haven
Kirtland, Elizabeth E., Public School, Yalesville
Knight, Elton E., 87 W. Elm St., New Haven
Knowlton, Lillian D., Benton School, New Haven
Lally, Minnie A., 249 Colony St., Meriden
Linn, Maynard W., Riverside School, Greenwich
Loring, William, Salisbury High School, Lakeville
McCall, Harold, 53 Prospect St., Stamford
McDermott, Millicent R., Ferry Street School, New Haven
McGrath, Elizabeth M., 1770 Park Ave., Bridgeport
Madden, Grace E., New Street School, Danbury
Malcolm, Elizabeth R., Dante School, New Haven
Martin, Louise E. F., 9 Arch St., Norwalk
Mink, Emma Freda, 214 Palisade Ave., Bridgeport
Monahan, Julia A., Washington School, 466 Howard Ave., New Haven
Morehouse, Helen B., 84 Mansfield Ave., Darien
Newton, Fred L., Jennings School, New London
O'Brien, William S., Public School, Glenville
O'Connell, Clara T., 27 Pleasant St., Bristol
Patterson, Bernice R., Charter Oak School, West Hartford
Patterson, Thomas H., Thomas H. Patterson School, First School Dist., Bristol
Pease, Eva B., Elementary School, Elmwood
Rickard, Anna E., 361 Brooklawn Ave., Bridgeport
Riggs, F. B., Indian Mountain School, Lakeville
Robie, Everett E., Cloonan School, Stamford
Sherman, Anne K., 55 Rusling Pl., Bridgeport
Sherman, Jeanette E., Quinnipiac School, New Haven
Smith, Minnie H., 201 Center St., West Haven
Steele, Julia M., 45 Holbrook St., Ansonia
Steele, Sarah M., 64 Filbert St., New Haven
Stevens, J. Edwin, 532 King St., Stratford
Thompson, Audrey M., Hindley School, Darien
Tyler, Elma, Deep River
Weaver, Alice M., 139 Main St., Norwalk
Whitman, Helen H., 48 N. Main St., West Hartford
Wilcox, Gladys, 254 Wethersfield Ave., Hartford

DELAWARE

Brinser, Ira S., Supt. of Schools, Newark
Doud, Emma M., 1708 Pennsylvania Ave., Wilmington
Stahl, H. E., Supt. of Schools, Claymont

DISTRICT OF COLUMBIA

Ashton, Robert H., 723 Girard St., N. W.
Ballenger, Lou E., Raymond School
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Beckham, Blanche, 2721 N St., N. W.
Bush, Grace, 922 F St., N. E.
Clark, Eugene A., Miner Teachers College
Cornell, Florence N., Edmonds School
Craighill, Susan R., 3062 Que St., N. W.
Dilger, Mary A., 3810 Warren St., N. W.
Doonan, Katharine, The Ontario
Dore, Bernadette L., 2862 28th St., N. W.
Draney, Mary E., John Burroughs School
Duganne, Mrs. L. R., W. B. Powell School
Dulin, Cecilia P., 110 Maryland Ave., N. E.
Fawcett, Blanche L., 3041 Sedgwick St., N. W.
Frank, Mary W., Petworth School
Gantley, Helen G., 2726 Connecticut Ave., N. W.
Gibbs, Mildred E., 1834 13th St., N. W.
Gillem, Mrs. Nellie F., 1733 You St., N. W.
Goodykoontz, Bess, Assistant Commissioner of Education, U. S. Office of Education
Gray, Mrs. S. E., 1840 Vermont Ave., N. W.
Green, Elsie E., Whittier School
Holland, Sarah B., 2901 Connecticut Ave., N. W.
Kelsey, G. E., 510 E. Clifton Ter.
Kirtland, Mineola, 1106 B St., N. E.
Leapley, Mrs. Lillian T., 1500 Southern Ave., S. E.
Lind, A. Grace, 4516 14th St., N. W.
Llufrio, Mary H., 3213 Adams Mill Rd.
Lockwood, Margaret M., Horace Mann School, Newark and 45th St., N. W.
Lyddane, Margaret R., 3500 14th St., N. W.
Matthews, Samuel D., 1811 First St., N. W.
Merritt, Mrs. Margaret R., John Quincy Adams School
Mortimer, Florence C., 1141 New Hampshire Ave., N. W.
Netherland, Mrs. Rosa Stokes, 613 Third St., N. E.
O'Hara, Elizabeth, 135 S St., N. W.
Ossire, Cora A., Curtis Hyde School
Ossire, Mary, Fillmore School, 35th and S Sts., N. W.
Payne, John C., 654 L St., N. W.
Pearson, M Blanche, 1829 Monroe St., N. W.
Perry, Leon L., 913 P St., N. W.
Pimper, Cora H., Ludlow School, Sixth and G Sts., N. E.
Pulizzi, Blanche L., 3912 Harrison St.
Renfri, D. I., 1516 12th St., N. W.
Ruediger, Mrs. W. C., Truesdell School
Sanderson, A. I., 4115 Military Rd., N. W.
Savoy, A Kiger, 217 T St., N. W.
Scrivener, Emily, 1012 Monroe St., N. E.
Shankland, S. D., Executive Secretary, Department of Superintendence, 1201 16th St., N. W.
Simmons, Effie P., 1317 R St., N. W.

Syphax, John E., 1338 Q St., N. W.
Tolliver, R. E., 920 S St., N. W.
Trusheim, Eva M., Congress Heights School
Wallace, Florence C., 75 Randolph Pl., N. W.

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Arrington, Mrs. Stella P., Supvg. Prin. of Primary Schools, Sanford
Baker, Mrs. Genevieve, 11 N. Lakeside, Lake Worth
Beal, Beulah, 151 W. Ninth St., Jacksonville
Beaman, Annie, 1668 Osceola St., Jacksonville
Benson, Ogla D., 1050 S. W. Sixth St., Miami
Bogart, Elizabeth M., 1412 Market St., Jacksonville
Carrier, Mrs. Alice Bingham, Orange Street School, St. Augustine
Chapman, Mrs. Virginia, 6401 N. 22nd St., Tampa
Cobb, Mrs. Elizabeth D., 403 N. Calhoun St., Tallahassee
Cone, Mrs. Elizabeth, 6020 Flora Vista, Tampa
Cooke, Nellie E., 123 E. First St., Jacksonville
Crawford, Mrs. W. H., P. K. Yonge School, Pensacola
Culver, Mrs. Lola M., 151 W. Ninth St., Jacksonville
Dean, Katie, 412 S. W. Fifth Ave., Miami
Fleagle, Mrs. Luneta, Robert E. Lee School, Tampa
Foulks, Frank M., 404 E. Ross Ave., Tampa
Gilday, Abigail, Coral Gables School, Coral Gables
Graves, Mrs. Marie M., 554 Lomax St., Jacksonville
Gray, Mrs. Florence, 715 Louisiana Ave., Tampa
Griffin, Edith, 222 E. Ft. King Ave., Ocala
Gwin, Lillian, 2818 Nebraska Ave., Tampa
Hamer, Mrs. Mildred, 6020 Floravista Ave., Tampa
Hammond, Mrs. Allie M., 508 S. Oregon Ave., Tampa
Helms, Mrs. Mildred, Elementary School, Largo
Hendry, Mrs. Ethel D., 212 W. Imogene St., Arcadia
Hennessee, Mrs. Edna W., Thomas Jackson School, Tampa
Hughes, Florence L., 816 Oak St., Jacksonville
Jordan, Mattie, 2307 Southview Ave., Tampa
Kent, Mrs. Mary, 1013 E. Buffalo Ave., Tampa
King, Ethel, 1206 E. Curtis St., Tampa
Langston, Thomas Hill, 6809 Wellington Ave., Tampa
Lence, Mrs. Loel, Box 491, Arcadia
McIntosh, James L., V. M. Ybor School, Tampa
Moon, Robert C., Sealey Memorial School, Box 488, Tallahassee
Morgan, Annie R., 919 Wolfe St., Jacksonville
Nelson, LaVerne, Roosevelt School, Tampa
Norris, Mrs. Edward F., 414 E. Sixth St., Jacksonville
Perry, Mrs. Vallie H., 909 26th Ave., Tampa
Plumb, Myrtle M., South Ward School, Clearwater
Sproull, Katherine F., 1545 Hubbard St., Jacksonville
Stafford, Mrs. A. H., 909 W. Colonial Dr., Orlando
Swearingen, Olive, 1623 N. Seventh Ave., Pensacola
Upson, Ruth Newell, 828 Oak St., Jacksonville
Weatherly, Hazel, 454 N. E. 38th St., Miami
Williams, Bessie L., 209 W. Ashley St., Jacksonville
Wynn, Mrs. Jessie D., Public School, Palm Beach
Yniestra, Allie, 229 N. Spring St., Pensacola

GEORGIA

Albright, Mrs. T. D., S. M. Inman School, 774 Virginia Ave., Atlanta
Beard, Jessie, 1222 Peacock Ave., Columbus
Bloodworth, Mrs. Jennie A., Crew Street School, Atlanta
Chapman, Annie, Davis Street School, Atlanta
Corrigan, Gertrude, Highland School, Atlanta
Cox, Mrs. Lena, Holly-Oaks, Route 2, Atlanta
Cox, Mrs. Winona S., Supvg. Prin. of Schools, Box 247, Moultrie
Davis, Mrs. W. P., 185 Westminster Dr., N. E., Atlanta
Faver, Kate R., Route 1, Smyrna
Flanagan, Mrs. W. I., Lumpkin Street School, Athens
Flynn, Lillian R., 94 11th St., N. E., Atlanta
Gardner, Eva, 96 40th St., Columbus
Glenn, Magdalen, College Avenue School, Athens
Harris, Mabel H., 836 College St., Macon
Hicks, Cleophas M., Inman Park School, Atlanta
Hilsman, Pattie, 196 Henderson Ave., Athens
Hollingsworth, Lois, Grant Park School, Atlanta
Jarrell, Ira, 619 Cascade Ave., S. W., Atlanta
Johnson, Lula M., 198 Ponce De Leon Ave., Atlanta
Kendrick, Margaret C., Jerome Jones School, Atlanta
Lin, Mary, 423 Clairmont Ave., Decatur
Mathews, C. B., Supt. of Schools, Newman
Miller, Fidelle, 321 Sycamore St., Decatur
Nolan, Lucile, Adair School, Atlanta
Pew, Mrs. B. H., 1020 Columbia Ave., Atlanta
Pollard, Gertrude, Morningside School, Atlanta
Purcell, B. D., 602 Linwood Ave., East Point
Richardson, Evelina E., 307 Second Ave., Atlanta
Riley, Romana, 404 E. Henry, Savannah
Robertson, Minnie C., 405 Hillcrest Ave., Macon
Roddey, Helen, 1230 Peachtree St., N. E., Atlanta
Soloman, Maggie, 1068 W. Peachtree St., Atlanta
Spears, Mrs. Cola, 3761 Ivey Rd., N. E., Atlanta
Stallings, Lila, 1017 Egmont St., Brunswick
Standard, Mary, 864 Courtney Dr., N. E., Atlanta
Taylor, May, 458 N. Highland Ave., N. E., Atlanta
Thornton, Mrs. Eva L., Joel Chandler Harris School, Atlanta
Tuck, Sara E., 1010 McLynn Ave., N. E., Atlanta

Walker, Knox, 521 Court House, Atlanta
Wayne, Mary W., 115 E. 36th St., Savannah
Wesley, Emma, Faith Elementary School, Atlanta
Wesley, Rusha, Lee Street School, Atlanta
Wilson, Mrs. Fred S., 870 St. Charles Ave., N. E., Atlanta
Wilson, Mrs. Homer L., Public School, Bolton
Woods, Mary E., 1071 Madison Ave., Athens
Wurm, Lillie, 187 Pine St., N. E., Atlanta

IDAHO

Bell, O. E., Central Junior High School, Idaho Falls
Black, J. Ellis, 1503 W. Bannock St., Boise
Harold, E. W., 405 S. Sixth St., Pocatello
Hines, Harold M., 1012 N. 18th St., Boise
Johnson, Anna, Emerson Elementary School, Idaho Falls
McSorley, M. Lillian, Lewis Clark Hotel, Lewiston
Peterson, Chester E., Lakeview School, Nampa

ILLINOIS

Alexander, E. L., 515 E. Franklin Ave., Edwardsville
Allen, May C., 6859 S. Merrill Ave., Chicago
Anderson, Edith V., 203 Sixth Ave., Moline
Anderson, Hazel C., Washington School, Elmhurst
Anderson, Will, 937 N. Harvey, Oak Park
Anspaugh, George E., 1923 S. Throop St., Chicago
Armour, Charles R., 1015 North Ave., Rockford
Astrom, C. Elsie, 1222 Sixth Ave., Moline
Bacon, Vivian, Jefferson School, Chicago Heights
Barber, Olive, P. A. Peterson School, Rockford
Bauerle, Martha M., 10 S. Mason, Chicago
Baumann, Margaret L., 944 N. Euclid Ave., Oak Park
Beck, Paul H., 706 S. Lombard Ave., Oak Park
Bednar, Christine, 132 W. Marquette Rd., Chicago
Beebe, Grant, 1225 Sedgwick St., Chicago
Bielenberg, Emma J., 3634 N. Avers Ave., Chicago
Boland, May Frances, 952 Lincoln Ave., Decatur
Bolerjack, Hobart, Columbus School, Cicero
Borough, Mary G., 1519 E. 69th Pl., Chicago
Bowyer, Vernon, 1070 W. Jackson Blvd., Chicago
Boyd, Grace Marie, 417 Shenstone Rd., Riverside
Bruner, Mrs. Olive P., 5435 Magnolia Ave., Chicago
Burns, Basil, 5324 Lane Pl., Downers Grove
Burroughs, E. B., 320 Leila Ave., Collinsville
Byrne, Margaret H., 9817 Vanderpoel Ave., Chicago
Carlyon, Edward L., 328 N. Maple Ave., Oak Park
Chandler, Turner C., 7814 Cornell Ave., Chicago
Cisne, W. G., 109 Maple St., Carbondale
Clickener, Sarah H., 825 W. William St., Decatur
Clinton, Catherine M., 6111 Eberhart Ave., Chicago
Clovd, Lura Ethel, 2020 Sherman Ave., Evanston
Cohler, Milton J., 2744 Winnemac Ave., Chicago
Coole, Mrs. Elda Belle, Grant School, Chicago Heights
Corrigan, Gertrude, Stewart School, Chicago
Crisp, Iva J., Lincoln School, 16th and Elmwood, Berwyn
Cummings, Anna, 909 Michigan Ave., Evanston
Daggett, Daisy V., 279 W. William St., Decatur
Dague, Mary V., 327 W. Prairie Ave., Decatur
Dahm, Walter, Central School, Des Plaines
Dale, Grace B., Central Junior High School, Moline
Dalin, Judith H., 910 Third Ave., Rockford
Damon, Russell I., 721 Ardmore Pl., Peoria
Davis, Lois Margaret, 921 Sheridan Rd., Evanston
Davis, Margaret M., 544 S. State St., Springfield
Dexter, Mrs. Anna B., 1453 Andrews St., Rockford
Doniat, Theola, 4129 Kenmore Ave., Chicago
Drew, Elizabeth L., 4514 Lake Park Ave., Chicago
Eddy, Bernice C., 6318 S. Maplewood Ave., Chicago
Fahy, Mildred, Schneider School, 2957 N. Hoyne Ave., Chicago
Gardner, W. R., 2127 N. Court St., Rockford
Gillies, Mary C., 2093 Lunt Ave., Chicago
Graham, Ray, Community High School, Mason City
Greve, Mabel C., 513 Third St., Savanna
Hall, Ida Crymble, 107 W. Wilson St., Streator
Hanlon, Mary R., McKay School, 6901 S. Fairfield Ave., Chicago
Harvey, Mrs. Clare W., 247 Home Ave., Oak Park
Headley, Mrs. Anna, 212 Pennsylvania Ave., Peoria
Heidler, Samuel H., 933 S. Fifth St., Springfield
Herman, Irene E., 214 W. Jackson St., Woodstock
Hickes, H. C., Goodwin School, Cicero
Hicks, Elvis L., 5644 N. Campbell Ave., Chicago
Higgins, Annas, 8153 S. Green St., Chicago
Houghton, Mrs. Marie, Noyes School, Evanston
Humphreys, Phila, 459 Washington, Elmhurst
Hunter, Howard A., Franklin School, Peoria
Imboden, Sarah Mark, 440 W. Macon St., Decatur
Jacobs, Nettie, 4341 N. Kildare Pl., Chicago
Jaynes, H. Gertrude, Mozart School, 2200 N. Hamlin Ave Chicago
Jeffrey, Robert C., 9045 Laflin St., Chicago
Jenkinson, Jennie S., 1669 W. 104th Pl., Chicago
Johnson, Milda, 1418 12th St., Moline
Keller, Anna P., 4828 W. Adams St Chicago
Kent, Orla G., Nancy L. Hill School Aurora

Kimes, Myrtle E., Plumb School, Streator
Kirkley, Sarah A., 3739 Wrightwood Ave., Chicago
Klitzke, Lyle K., Lincoln School, Maywood
Knapp, C. E., 713 W. Grand Blvd., S., Springfield
Kroeger, Florence R., 415 Anthony St., Glen Ellyn
Laing, Lucy I., 5307 Hyde Park Blvd., Chicago
Laughlin, Butler, 6800 Stewart Ave., Chicago
Lineberger, Clarence, 1437 Asbury Ave., Hubbard Woods
Liska, Josephine, Farragut School, 2339 S. Turner Ave., Chicago
Livingston, Mary B., 7815 Euclid Ave., Chicago
Long, Ida, New and Old Field Schools, Elmhurst
Lowry, W. R., 1408 High St., Chester
Luther, Jessie I., North Shore Hotel, Evanston
Lyford, Aimee E., 406 Prospect St., Elgin
McDonnell, Mary R., 1100 N. La Salle St., Chicago
McGuire, Honora, 7300 Prairie Ave., Chicago
McLaughlin, Visa, 1248 Winona St., Chicago
MacConkey, June H., 321 N. Central Ave., Chicago
Maddock, Alice E., 9648 Vanderpoel Ave., Chicago
Maine, Helen C., 6708 Union Ave., Chicago
Mason, Grace S., 640 Woodland Park, Chicago
Mattocks, Marie, 914 Lafayette Park, Chicago
Mayo, Frank, 2449 E. 74th St., Chicago
Mead, Alice J., 1162 W. Macon St., Decatur
Merrill, Louise, 10123 S. Wood St., Chicago
Meyers, Mrs. Edna R., 10224 Prospect Ave., Chicago
Middleton, Anthony, 221 Arthur Ave., Peoria
Miller, Anna, 11 Prairie Ave., Danville
Moncreiff, Mrs. Edna, 318 N. Fifth, Maywood
Morisey, Vangie, 3923 Schuber, Chicago
Munson, Grace E., 1200 Sherwin Ave., Chicago
Murphy, Joseph, 607 Barker Ave., Peoria
Newton, Dora E., 2809 Ninth Ave., Rock Island
Nichols, Fred R., 6200 Kenwood Ave., Chicago
Nyquist, Alice, 1720 11th Ave., Moline
O'Brien, Margaret G., 530 N. Church St., Rockford
O'Connor, Mary A., 737 S. Float Ave., Freeport
Parker, Capitola, Grade School, Marengo
Patrick, Mary L., 6030 Kimbark Ave., Chicago
Paxton, Agnes M., 206½ E. State St., Jacksonville
Pearsons, M. Evlyn, 1031 Dempster St., Evanston
Phinney, Isabelle H., 1128 N. Church St., Rockford
Phipps, George Carl, 8106 Eberhart Ave., Chicago
Pierce, Paul A., 5555 Rimbark Ave., Chicago
Pierce, Mrs. Pearl, Washington School, Maywood
Postel, Harold H., 7945 Maryland Ave., Chicago
Powers, E. W., Supt. of Schools, Petersburg
Pratt, Clarence W., 107 S. Glen Oak St., Peoria
Price, Frederick E., 7356 Merrill Ave., Chicago
Primrose, J. W., Irving Junior High School, Quincy
Rape, Arthur O., 637 N. Kenilworth Ave., Oak Park
Ritow, Herman, 1170 Hill St., Highland Park
Roach, Mary Margaret, 125 N. Edward St., Decatur
Rowley, Ruby Elizabeth, North Shore Hotel, Evanston
Rueff, Mrs. Katherine S., Bradwell School, 7710 Burnham Ave., Chicago
Sanders, Ellen M., 2337 Albany Ave., Chicago
Sanford, Helen M., 1940 Sherman Ave., Evanston
Schimek, Cecelia B., Mason School, 1830 S. Keeler Ave., Chicago
Shaver, Ida A., Cooper School, 1624 W. 19th St., Chicago
Shield, Ruth, 912 N. Monroe St., Peoria
Shine, Joseph B., 9350 S. Throop St., Chicago
Smith, Anne L., 400 Whitley Ave., Joliet
Spurgin, William H., 7855 S. Shore Dr., Chicago
Steinmetz, Kathryn, 8045 Drexel Ave., Chicago
Stullken, Edward H., 5464 W. Walton St., Chicago
Sylla, Ben A., McKinley School, Chicago Heights
Tipton, John B., 120 John St., DeKalb
Todd, Henrietta M., North Shore Hotel, Evanston
Tregellas, Ida M., 4144 Sheridan Rd., Chicago
Urquhert, Margaret M., 1641 N. Mozart St., Chicago
VanLiew, Helen F., 1632 N. Luna, Chicago
Vayette, Kenneth E., 204 N. Perry Ave., Peoria
Vigles, Maude E., 932 S. Webster St., Decatur
Voigt, Ida, 415 E. Pleasant St., Freeport
Waddell, Mrs. Emma, Hawthorne School, Elmhurst
Waddington, Mattie, 1269 W. Wood St., Decatur
Walls, Mrs. Thomas H., 266 DuPage St., Elgin
Webster, Mrs. Frances, 1600 Hinman Ave., Evanston
Wells, Jennie E., 1495 W. Macon St., Decatur
Wetherbee, Ralph H., 10125 Lowe Ave., Chicago
Wheelock, Alice H., 713-A 18th St., Moline
White, George, 6207 S. Kimbark Ave., Chicago
Williams, Claude L., 7830 Cornell Ave., Chicago
Williamson, Lilias M., 6622 University Ave., Chicago
Wilson, Elizabeth C., Delano School, 3937 Wilcox St., Chicago
Wilson, Irvin A., 437 S. Stone Ave., LaGrange
Winslow, Charles, 4332 N. Paulina St., Chicago
Wood, Albert W., John Deere Junior High School, Moline

INDIANA

Anderson, Lillian P., 128 Chapin St., South Bend
Ballard, R. W., James Whitcomb Riley School, East Chicago

Banta, Fay M., 2620 N. Alabama, Indianapolis
Baugh, William E., 1235 W. 25th St., Indianapolis
Bedford, Anna Pearl, Public School No. 85, 338 S. Arlington Ave., Indianapolis
Black, Ernest J., 3749 Guilford Ave., Indianapolis
Black, Grace M., 1002 N. Dearborn St., Indianapolis
Buckley, Mary E., 2625 Central Ave., Indianapolis
Buscher, Gertrude, 2928 Park Ave., Indianapolis
Carter, Charlotte, 329 E. 30th St., Indianapolis
Cary, Jeannette S., 2027 Boulevard Pl., Indianapolis
Chapman, Nellie, 5035 Kenwood Ave., Indianapolis
Clark, A. W., Columbia School, Hammond
Connor, Mary, 25 N. Randolph St., Indianapolis
Cottingham, Edith, 524 E. First St., Bloomington
Denzler, Verena, 5160 Pleasant Run Blvd., Indianapolis
Drake, Flora E., 2230 Brookside Ave., Indianapolis
Dunn, J. L., School No. 52, 2600 Walnut St., Indianapolis
Echolds, E. F., 359 Audubon Rd., Indianapolis
Eller, Mrs. Lola Stuart, 2502 E. 58th St., Indianapolis
Eppert, Geraldine, 2828 N. Illinois St., Indianapolis
Estabrook, Ethel M., 328 W. Sixth Ave., Gary
Fisher, Emmett N., Perley School, South Bend
Fisher, George H., 301 Linwood Ave., Indianapolis
Foster, Nancy L., 5947 Hyslop Pl., Hammond
Funk, Olive K., 519 E. 30th St., Indianapolis
Galvin, Cecelia, School No. 3, 23 N. Rural St., Indianapolis
Granger, Grace A., School No. 46, Indianapolis
Hall, Edith B., 3253 N. Penn, Indianapolis
Hall, L. E., 842 Oakland Ave., Indianapolis
Hamilton, Otto T., Oaklandon
Hanna, Laura E., School No. 27, 1702 Park Ave., Indianapolis
Hansen, Otillia E., 126 W. Sixth St., Michigan City
Hayes, George L., 819 N. California St., Indianapolis
Hayward, O. B., 4727 Pine St., Hammond
Helphinstine, Ida B., 2944 Cornell Ave., Indianapolis
Hendricks, Hazel H., 1121 Northwest St., Indianapolis
Herbst, Frieda, 966 N. Belleview Pl., Indianapolis
Hill, Adah, 2108 N. Pennsylvania St., Indianapolis
Horton, D. W., Supt. of Schools, Muncie
Howe, J. Edwin, 423 S. Grand Ave., Evansville
Hyatt, Eliza, 304 E. Walnut St., Washington
Jones, Sara, 302 N. Van Rensselaer St., Rensselaer
Kapnick, George C., Hanna School, Ft. Wayne
Keller, Mabel, School No. 70, 510 E. 46th St., Indianapolis
Kimber, Mrs. Grace W., School No. 47, 1240 W. Ray St., Indianapolis
Kirby, Elizabeth, 6021 Bellefontaine St., Indianapolis
Knight, H. G., 226 Buckingham Dr., Indianapolis
Knowles, Mrs. Jeannette B., 1233 Shelby St., Indianapolis
Lacey, Mrs. Georgia H., 140 E. 36th St., Indianapolis
Lee, Ruby Gray, 3231 Park Ave., Indianapolis
Leeds, Elizabeth, 766 Jackson St., Gary
Lemme, Carl W., 1820 Bayard Park Dr., Evansville
Lemon, Mary Morgan, 22 S. 17th St., Richmond
Loeper, Helen, 1508 N. Alabama St., Indianapolis
McCarty, Adelaide, Grayland Hotel, Indianapolis
McGee, Mary, 700-710 N. Delaware St. Indianapolis
Mahoney, Agnes, 4227 Broadway, Indianapolis
Malone, Julia, Lincoln School, South Bend
Moran, H. A., Box 333, Mishawaka
Morgan, Kate W., 1114½ Main St., Richmond
Morgan, Mary E., 717 E. 48th St., Indianapolis
Morris, John M., South Wayne School, Ft. Wayne
Murray, M. C., Supt. of Schools, Michigan City
Nolcox, Matthias, School No. 17, Indianapolis
Norris, E. L., 3554 Kenwood Ave., Indianapolis
Owen, J. J., 7544 Madison Ave., Hammond
Parker, Albert R., Adams School, Ft. Wayne
Pedlow, Ella, 1244 N. Illinois St., Indianapolis
Pennington, Dorothy, William Penn School, 1902 W. Morris, Indianapolis
Pich, Martha M., 236 N. Hamilton Ave., Indianapolis
Popp, Freda M., 1831 N. Alabama St., Indianapolis
Price, Maude J., 4159 Guilford Ave., Indianapolis
Ramey, Belle, 718 E. 34th St., Indianapolis
Ray, Mary, 3849 N. Delaware, Indianapolis
Reade, Anna R., 409 E. 31st St., Indianapolis
Reimold, Crissie E., Henry Studebaker School, South Bend
Reynard, Mrs. May, Colfax School, South Bend
Rielag, Corinne, 962 N. Pennsylvania, Indianapolis
Riker, Jeannette, 1807 Ruckle St., Indianapolis
Rupp, Carrie B., Rea School, Terre Haute
Russell, Jessie C., 5936 Forrest Lane, Indianapolis
Schmidt, Mrs. Mabel, 212 E. 46th St., Indianapolis
Scott, Elizabeth H., 4159 Guilford Ave., Indianapolis
Seaton, Mary B., Hamilton School, Ft. Wayne
Sherwood, Hollace C., Marion Township Consolidated School, Mitchell
Stafford, Lawrence T., 245 W. 38th St., Indianapolis
Steely, G. A., 1512 S. A St., Richmond
Stinebaugh, Virgil, 1110 N. Capitol Ave., Indianapolis
Stout, Hazel V., Payne School, Franklin
Stump, Merlin B., School No. 30, 39 N. Elder Ave., Indianapolis
Suchanek, Minnie M., 842 Marietta St., South Bend

Sunthimer, Charles E., 3358 College Ave., Indianapolis
Swope, Lena, 2101 N. New Jersey St., Indianapolis
Thompson, Rose H., 2824 Boulevard Pl., Indianapolis
Thornburgh, John W., 5167 Guilford Ave., Indianapolis
Waters, Henrietta, School No. 73, Indianapolis
Weld, Mildred, 1508 N. Alabama St., Indianapolis
Wiles, Eva Y., 424 E. 21st St., Indianapolis
Williams, Mrs. Jeannette, School for Crippled Children, Box 520, Route 2, Indianapolis
Witt, Elizabeth R., 610 N. Bosart Ave., Indianapolis
Wright, R. G., 1830 High St., South Bend
Wright, Wendell W., Dept. of Education, Indiana University, Bloomington
Wyrick, Adda, 2248 Broadway, Indianapolis

IOWA

Aarvig, Bertha O., 926 Third Ave., N., Ft. Dodge
Allen, Clara B., 145 E. Maple Ave., Ottumwa
Annette, Sister Mary, Librarian, Mount St. Francis, Dubuque
Baker, J. Ella, 1523 23rd St., Des Moines
Beall, Ross H., Supt. of Schools, Bellevue
Bovee, Earl E., 4315 Orleans Ave., Sioux City
Bradshaw, Alice, 751 16th St., Des Moines
Buettell, Emma L., Prescott Apts., Dubuque
Christie, Mary S., 425 Independence Ave., Waterloo
Connor, June, Irving School, Sioux City
Davitt, Naomi, 410 Boone St., Boone
FitzGerald, James E., 1821 Ross St., Sioux City
Greenhow, Alice Jean, 439 Winona St., Dubuque
Horn, Ernest, State University of Iowa, Iowa City
Jess, Ellen A., 570 W. 11th St., Dubuque
Kelley, D. J., Supt. of Schools, Tipton
Kitch, R. L., 456 Burton Ave., Sioux City
Kober, Marie, McKinley School, Mason City
Lyon, Georgia, Grant-Joy Schools, Sioux City
Matthews, Laura P., 5115 Grand Ave., Des Moines
Murphy, Gertrude, 2714 High St., Des Moines
Newcomer, Mrs. Mabel, 123 S. Fourth St., Clear Lake
O'Connor, Mary, 401 Sioux Apt., Sioux City
Orcutt, Della, 623 Kingsley Ave., Waterloo
Osborn, Charlotte, 3248 Jackson St., Sioux City
Parr, Cora A., 2901 Ingersoll Ave., Des Moines
Quigley, Georgia, 928 30th St., Des Moines
Rownd, Nellie M., Edison School, Waterloo
Schaefer, Mildred L., 313 Walnut Court Apts., Waterloo
Sloan, Isabelle P., 1514 Rebecca St., Sioux City
Stohlgren, Anna, 1918 E. 13th St., Des Moines
Tapper, Inga B., 348 Forest Dr., Cedar Rapids
Walker, Minnie M., Brooks School, Des Moines
Walters, Marjorie, Harrison School, Cedar Rapids
Watson, Ruth, 332 Argyle St., Waterloo
Winzer, Paula, 327 S. Garfield Ave., Burlington

KANSAS

Adams, Alice, 2122 State, Kansas City
Adams, Lillie, 422 Parallel, Kansas City
Anderson, Melonee, 2115 N. Fifth, Kansas City
Barber, Gertrude L., McKinley School, 1110 W. Fourth St., Coffeyville
Barrett, Ruth, 907 S. Lawrence, Wichita
Benscheidt, Ella, 227 W. 12th St., Hutchinson
Bonwell, W. A., 645 N. Volutsia, Wichita
Botkin, Ethel, 102 E. 17th, Hutchinson
Brown, Dora, Ingalls School, Kansas City
Browne, Margaret, Hotel Kansan, Topeka
Caldwell, L. H., 631 N. Erie, Wichita
Carlton, Franklin S., 448 S. Roosevelt, Wichita
Cheney, Miriam, Clara Barton School, Kansas City
Clavin, Maud E., 218 S. Kansas Ave., Olathe
Comer, Mrs. Lena, 645 Ann Ave., Kansas City
Crump, Lelia, Kealing School, Kansas City
Dowd, Gertrude, 424 S. Millwood, Wichita
Drisko, Caroline, 2119 State St., Kansas City
Easter, Bruce C., Dunbar School, Salina
Eastman, Grace, 19 E. 11th St., Hutchinson
Elliott, Virginia, Lincoln School, Kansas City
Evans, Myrtle M., Abbott School, 15th and Troup Ave., Kansas City
Glasgow, Mattie, 429 N. 17th St., Kansas City
Gray, Maude, 236 N. 18th St., Kansas City
Griffith, Lenna B., 237 N. Poplar, Wichita
Hartford, May, 108 E. 14th St., Hutchinson
Hatfield, Gertrude M., 410 Ida St., Wichita
Hefflefinger, Lillie, 226 W. Second, Junction City
Henry, Emma L., 323 S. Bluff Ave., Anthony
Hillerman, Vina E., 501 Exchange St., Emporia
Hudson, Jane, 408 E. First, Hutchinson
Jarvis, Claire, 1230 Reynolds, Kansas City
Jones, Laura M., Central School, Neodesha
Jones, Lucy, 3111 Parallel, Kansas City
Kier, Hazel, Parker School, Kansas City
Kinsey, Gladys, 438 N. 18th St., Kansas City
Kiser, Florence, 621 Stewart, Kansas City
Kittell, Mrs. Martha, 1902 West St., Topeka
Lamb, Clara S., Gould Hotel, Kansas City
Lewis, Daniel W., 2064 N. Fourth St., Kansas City
Lill, Grace, 123 N. Topeka St., El Dorado
McAvoy, Jennie, 625 N. Topeka, Wichita
McConnell, Mabel, 35 N. Seventh St., Kansas City
McCormick, Leur R., 2222 Wilmington, Topeka
McCully, Maud, 716 W. Ninth St., Coffeyville

McKinley, Bertha, 3111 Parallel, Kansas City
McNaughton, Lola, Frances Willard School, Kansas City
Mahaffie, Ella M., Park School, Kansas City
Mahin, C. A., 1725 Fairmount Ave., Wichita
Mann, Harriet, 3920 Cambridge, Kansas City
Martin, Minnie, 1118 Haskell, Kansas City
Meeker, Mildred, 608 N. Fourth St., Arkansas City
Miller, Elizabeth, Grund Hotel, Kansas City
Miller, Elizabeth S., 4132 Rainbow Blvd., Kansas City
Moore, Grace, 608 N. Broadway, Abilene
Moore, Wilmie, 10 N. Elm St., Hutchinson
Morrow, C. M., 1120 N. Monroe St., Topeka
Nelson, Mary C., Bancroft School, Kansas City
Nelson, Sara, 3944 Cambridge, Kansas City
Packer, Josephine, Irving School, Wichita
Peed, Julia A., Winans School, Hutchinson
Perkins, Josie, Avenue A School, Hutchinson
Rebstein, Clara O., 511 N. Belmont, Wichita
Rice, Pearl, McKinley School, Kansas City
Rippey, Winifred, Box 214, Kansas City
Roberts, Grace, 544 Everett, Kansas City
Robinson, Ella V., 1216 Washington Blvd., Kansas City
Saunders, Jessie, 1318 Barnett, Kansas City
Singer, Mrs. Mary J., 341 N. Topeka Ave., Wichita
Smith, Aura, 2007 Sandusky, Kansas City
Snyder, Laura G., 1345 S. Clifton, Wichita
Sparks, Elizabeth A., Frances Willard School, 35th and Orville, Kansas City
Streeter, Helen, 400 N. 16th St., Kansas City
Sunter, Ethel, 1603 Dodd, Kansas City
Thomas, Zoe, 202 N. 23rd St., Kansas City
Thornburg, Mrs. Winnie C., 817 S. Spruce, Wichita
Tribue, Leota, Phillips School, Kansas City
Vincent, Mary, Elementary School, Fowler
Vogenitz, Mrs. May H., 420 E. 15th Ave., Hutchinson
Watkins, Hazel A., 1715 Maple, Wichita
West, F. C., 1003 Indiana Ave., Wichita
Wilson, Mollie, 724 N. B St., Wellington
Wine, E. C., 1147 Perry, Wichita

KENTUCKY

Bligh, Anna M., 673 Cecil Ave., Louisville
Bradner, J. W., Supt. of Schools, Middlesboro
Coons, Etta B., 173 Woodland Ave., Lexington
Drewry, Mamie M., 2027 Baringer Ave., Louisville
Edmonds, Eva F., 710 Central Ave., Lexington
Gotherman, Edward E., Jefferson Davis School, Lexington
Haney, Mrs. John F., P. O. Box 66, Ashland
Hubbard, D. B., 3909 Gilbert Ave., Covington
Kelley, Nora S., I. N. Bloom School, Lucia Ave., Louisville
Lafferty, E. M., E. Jenkins Station, Jenkins
Lovely, Lucile, 141 Owsley Ave., Lexington
McDaniel, Lottie, Virginia Street School, Hopkinsville
Reibert, Lydia, 1306 Highland Ave., Louisville
Robertson, Louise, 1379 Tyler Park Dr., Louisville
Spurgin, Lucy, 1416 Brook St., Louisville
Stanley, Mrs. Emma M., 201 Crescent Court, Louisville
Stutz, Elsa, 2210 Sherwood, Louisville
Toliver, Mrs. Edna L., 425 N. Third, Danville
Weibel, Elise, 2210 Sherwood, Louisville
Wellenvoss, Nora E., 1612 Beechwood Ave., Louisville
Wert, J. V., 18th and Holman, Covington

LOUISIANA

Aitkens, Emma C., 1108 Napoleon Ave., New Orleans
Bains, Mary, P. O. Box 248, Shreveport
Barrett, Ellen T., 1432 Fern St., New Orleans
Bartholf, Harriet, 842 Prospect Ave., Shreveport
Baudint, A. Leonie, 5418 Constance St., New Orleans
Collette, Mrs. Ida R., 704 Iris St., Lake Charles
Dingle, Mary M., Alexander School, Shreveport
Dixon, Florence E., P. A. Capdau School, 3821 Franklin Ave., New Orleans
Ferran, Rose, 930 N. Broad St., New Orleans
Goldenberg, Rachel, 1128 Dalzell, Shreveport
Hatcher, W. B., Supt. of Schools, Baton Rouge
Littlejohn, Augusta Pugh, 1221 Leontine, New Orleans
Nuttall, Mrs. D. J., 2949 Midway, Shreveport
Rives, Fanny V., P. O. Box 45, Mansfield
Rugg, L. S., West End Grammar School, Alexandria
Schuster, Hattie L., 610 Herndon Ave., Shreveport
Stockley, Callie L., 1817 Calhoun St., New Orleans
Sullivan, Violet M., 1105 Jefferson Ave., New Orleans
Thomas, Josephine, 3220 Cleveland Ave., New Orleans
Tubre, B., 2125 Monroe St., Alexandria
White, Mariah D., 901 Cherokee St., New Orleans
Williams, Fannie C., 1922 Louisiana Ave., New Orleans
Wilson, Florence, Lafayette School, New Orleans
Wright, L. Zenobia, 2515 St. Philip St., New Orleans

MAINE

Cullen, William, Jordan Grammar School, Lewiston
Taylor, Mary E., 71 Washington St., Camden
Teague, Grace L., 137 College St., Lewiston
Wright, Effie, 29 Cherry St., Bath

MARYLAND

Adams, Margaret, School No. 218, Baltimore

Beckenbaugh, Isabella, 2208 Virginia Ave., Hagerstown
Bell, Mrs. Edna Correll, 2932 St. Paul St., Baltimore
Blonskey, Lula M., 407 Valley St., Cumberland
Botsford, Jane E., 507 Hill Top Dr., Cumberland
Bracy, Earle, Frederick Street School, Cumberland
Brain, Earl, Hill Street School, Frostburg
Broening, Mary L., 3906 Canterbury Rd., Baltimore
Burch, Miriam R., 114 E. 33rd St., Baltimore
Carroll, Agnes, 451 Highland St., Cumberland
Carroll, James G., Tench-Tilghman School No. 13, Baltimore
Caudill, Imogen, Eckhart School Frostburg
Cleaves, Frances M., 221 Howard St., Elkton
Collins, Mrs. Gertrude Rowley, Station A, Cumberland
Compton, Carolyn V., 106 E. A St., Brunswick
Didier, Claudia B., 4 E. 30th St., Baltimore
Dowling, Nellie F., 216 Hammond St., Westerport
Duke, Mrs. Cassie B., Public School., Prince Frederick
Eversfield, Emily W., Windsor Hills School, Alto Ave. and Mt. Holly St., Baltimore
Fairbank, Grace C., 2041 E. 32nd St., Baltimore
Fatkin, William G., Public School, Luke
Fuller, Althea R., 830 Green St., Cumberland
Giffen, Mrs. Sallie, Virginia Avenue School, Cumberland
Griffin, Edna Grooms, 1601 McCulloh St., Baltimore
Griffin, Mrs. Helen Albright, Maryland Avenue School, Cumberland
Harney, Margaret A., 1412 Reisterstown Rd., Pikesville
Harper, J. Norman, R. F. D. 3, Frederick
Higgins, Sarah, Columbia Street School, Cumberland
Hill, Elsie M., Flintstone
Hill, Mary C., 400 Camden Ave., Salisbury
Hoover, L. Mabel, 1771 Homestead St., Baltimore
Jones, Charles W., 1143 N. Carey St., Baltimore
Kerr, Mary C., 2130 Bolton St., Baltimore
McGeady, Loretto, Box 160, Cumberland
McKnight, Sue, 101 Columbia St., Cumberland
Magers, Ida R., 1801 Poplar Grove St., Baltimore
Manley, John F., Public School, Frostburg
Manning, Annie Lee, 3421 Mondawmin Ave., Baltimore
Miller, Persis K., School No. 76, Fort Ave. and Decatur St., Baltimore
Monred, Ravenell A., 18 Diamond Ave., Gaithersburg
Morgan, Gertrude E., Grammar School, Centreville
Muesse, Katherine F., 1248 N. Broadway, Baltimore
Murphy, George B., Platoon School No. 112, Baltimore
Orr, Jessie B., Jackson School, Lonaconing
Powell, Nellie E., Public School, Lavale
Riordan, Josephine, 142 Charles St., Annapolis
Rizer, Richard T., 42 W. Main St., Frostburg
Rose, Anna F., Elementary School, Rosemary St., Chevy Chase
Sanders, Grace S., 2111 St. Paul St., Baltimore
Scarborough, Miriam E., Elkton
Schaut, M. Grace, 3312 W. North Ave., Baltimore
Schluderberg, George W., Public School, Dundalk
Screen, Isabelle, Narrows Park, Cumberland
Shamberger, J. Hiram, School No. 54, Baltimore
Simmons, Mary E., 523 E St., Sparrows Point
Smithson, Clara E., 3306 Clifton Ave., Baltimore
Stieg, May L., Elementary School No. 88, Baltimore
Stromberg, Helen, 3505 Taney Rd., Baltimore
Stromberg, Martha, 3505 Taney Rd., Baltimore
Sultzer, Mary F., School No. 51, 34th and Frisby Sts., Baltimore
Talbott, Adele, 4206 Roland Ave., Baltimore
Taliaferro, Sallie C., 3314 Elgin Ave., Baltimore
Thalheimer, Florence, Temple Garden Apt., Baltimore
Turnbull, Josephine, 2102 Rosedale St., Baltimore
Tyson, Mildred E., School No. 222, Baltimore
Upham, Mrs. Margaret S., 211 Washington St., Cumberland
Watkins, Lida E., 626 Orpington Rd., Baltimore
Webster, Ralph R., Beall High School, Frostburg
Weglein, David E., Supt. of Schools, Madison and Lafayette Ave., Baltimore
Wenner, E. Virginia, Frederick
White, Sue B., School No. 99, North Ave. and Washington St., Baltimore
Wiers, Mary M., School No. 48, Baltimore
Willison, Mildred E., 401 Decatur St., Cumberland
Worthington, Harriet E., Elementary School No. 65, Baltimore

MASSACHUSETTS

Adams, Mabel E., 38 Percival St., Dorchester
Alderman, Etta L., 42 Bliss St., West Springfield
Allen, Grace A., 25 Bacheller St., East Lynn
Andrews, Frank A., 47 Clark St., Worcester
Atkins, Robert S., Thomas N. Hart School, South Boston
Barrett, Emma S., 39 William St., Worcester
Barrows, Howard F., Box 85, East Falmouth
Barry, Agnes E., Winship School, Dighton St., Brighton
Barry, Mary A., 58 Proctor St., Salem
Barry, William J., 108 Warren St., Roxbury
Bates, William Lester, Lowell School Dist., Jamaica Plain
Baylies, Stella H., 80 Hanover St.,, Fall River
Beaumont, Louise M., 163 Chandler St., Worcester
Belding, Alice H., 44 William St., Worcester
Bemis, Fanny M., Robert O. Morris School, Springfield
Bigelow, Gertrude E., 50 Columbia St., Brookline

Billings, Catharina W., 32 Coolidge Rd., Medford
Bliss, Carrie W., 233 Arnold St., New Bedford
Brassil, Theresa N., Bright School, Waltham
Briggs, Elizabeth M., Ingraham and Donaghy Schools, New Bedford
Brown, Harriet E., 22 Marietta St., North Adams
Buckingham, B. R., 15 Ashburton Pl., Boston
Bulkley, Fannie A., 21 Washington St., Gloucester
Burnell, Martha M., 30 Maple Ave., Bridgewater
Burns, Eva S., Homer School, Belmont
Burt, Martha G., 31 N. Prospect St., Amherst
Carbee, Katharine L., Balch School, Norwood
Carrigan, Rose A., Shurtleff School, Dorchester
Caton, Anne J., Everett Hale School, Everett
Chase, Sara E., Washington School, Springfield
Cheney, Mrs. Bessie B., Priest Street School, Leominster
Chevalier, Ada E., Pierce School, Brookline
Clark, Katherine M., 108 Dudley St., Medford
Copland, Janet F., Dean School, Stoneham
Corish, Gertrude L., 86 Mill St., New Bedford
Cota, Ardell M., Cary School, Chelsea
Cragin, S. Albert, 58 S. Main, Reading
Craven, Thomas D., 42 Mellen St., Dorchester
Crockwell, Winifred Mary, 11 Manning St., Medford
Cronan, Mary H., Robinson-Valentine School, Chicopee
Currier, William G., South St., Hyannis
Daniels, Laura A., 46 Forest Ave., Springfield
Daniels, Nellie F., 201 Newbury St., Brockton
Davis, Bertha S., 43 E. Emerson St., Melrose
Dingley, Vivian A., 20 Ware St., Cambridge
Dodge, Gertrude M., 28 Channing St., Worcester
Doherty, Alice M., 592 Broadway, Everett
Donovan, James A., Elihu Greenwood School, Hyde Park
Drummy, Julia I., Callahan School, Norwood
Easton, Norman S., Davis School, Fall River
Emerson, Edith W., Russell School, Arlington
Fales, Annie E., 58 W. Main St., Westborough
Fisher, G. Milton, Woodland Street School, Worcester
Fitzpatrick, John L., Fitch School, Waltham
Flagg, Sadie E., White Street School, Springfield
Fletcher, Elaine M., Prospect Street School, Shrewsbury
Forbush, L. Mabel, 92 Myrtle St., Waltham
Forster, Bertha E., Brooks School, West Medford
Fuller, Flora E., 107 Appleton St., Arlington
Gainsman, Edith A., 2-A Marble St., Worcester
Goodnow, Mrs. Gladys L., 216 Davis St., Greenfield
Gorman, John F., 60 Bellevue Ave., Winthrop
Graham, John H., 15 Huron Ave., Cambridge
Haggerty, Margaret M., 611 Rimmon Ave., Chicopee
Hall, Flora R., Adams School, Lexington
Harding, Elizabeth G., 23 Essex St., Beverly
Harrington, Harlan L., 26 Georganna St., South Braintree
Hatch, Bertha C., 3 Mt. Vernon St., Melrose
Hathaway, Bertha C., George H. Dunbar School, New Bedford
Hawkinson, Emma S., 29 Crosby St., Webster
Henderson, Grace H., Winslow School, Tyngsboro
Hicks, Edith M., 479 Chestnut St., Lynn
Higgins, Effie Grace, 27 Marianne Rd., Waltham
Higgins, Ethel G., Hardy School, Arlington
Holman, Hilda, North School, Wellesley Hills
Howard, Stella M., Chapin School, Williamsett
Howlett, Cora M., Middle Street, South Amherst
Hunt, Nellie B., 22 Bacheller St., East Lynn
Jenkins, Emma F., 56 Perry St., Brookline
Jenkins, Florence S., 70 Maywood St., Worcester
Jenney, Charles A., Russell School, Brockton
Johnson, Ethel M., 11 Burrill Ave., Lynn
Johnson, Olga A., 9 Falmouth St., Worcester
Joyce, Helen M., 14 Maple St., Framingham
Keefe, Margaret, Franklin School, Lexington
Keenan, Vincent A., 59 Bellevue Hill Rd., West Roxbury
Kennedy, Katherine T., Burncoat School, Worcester
Kerrigan, Katharine E., 2 Clement St., Worcester
Lahan, Anna F., 51 Birchwood Rd., Methuen
Larrabee, Ernest A., 21 South St., Shrewsbury
Lawlor, Edward A., Gilbert E. Hood School, Lawrence
Leach, Luthera M., 42 Ellis St., Brockton
Lewis, Mary E., 107 Paine St., Worcester
Lusk, L. Elizabeth, 1802 Beacon St., Brookline
Lynch, Theobald A., Woodrow Wilson School, Dorchester
McCarthy, Julia A., West and Winslow Schools, Norwood
McCarthy, Stella L., Jireh Swift School, New Bedford
McDonnell, John M., Phillips Brooks School, Dorchester
McDonnell, Katharine C., 124 Sutherland Rd., Boston
McGillicuddy, Ellen T., Granite Street School, Worcester
McIntire, Ralph A., 18 Park St., Florence
McMullen, Charles B., 88 Whites Ave., Watertown
Markham, Myrtle L., 57 N. Main, Natick
Martin, Benjamin E., 20 Circuit Ave., Worcester
Mathews, Maud A., 71 Phillips St., Fall River
Maynard, Florence, Dartmouth Street School, Worcester

Metcalf, Lucie A., 9 Washburn Ter., Brookline
Miller, Florence M., 54 Bloomfield St., Dorchester
Molloy, Mary G., 146 Veazie St., North Adams
Moore, Florence E., 227 Pope St., New Bedford
Morrissey, Ellen E., 246 Main St., Indian Orchard
Newell, Elizabeth T., 65 Spring St., Medford
Niland, Anna M., 202 Byron St., East Boston
O'Brien, John J., 31 Elm St., Hingham
O'Hern, Mary A., 324 E. Main St., North Adams
Oliver, Grace E., Dix Street School, Worcester
Phemister, Alice G., 308 High St., West Medford
Potter, Zulette, 101 Beach St., Revere
Pottle, Annie C., 89 Adams St., Waltham
Preston, Alice M., 292 Dodge St., Beverly
Priest, Maud B., Thomas Hill School, Waltham
Rafter, Charlotte, 22 Gaylord St., Dorchester Center
Raymond, Ward, Weir Grammar School, Taunton
Reddy, Joseph A., William E. Endicott Dist., Glenway and Harvard Sts., Boston
Reed, Alice C., 56 Otis St., Medford
Reid, Gertrude L., 50 Randall Ave., East Weymouth
Remon, Ruth E., 13 Juniper Ave., Salem
Richardson, Bertha, 56 Ft. Pleasant Ave., Springfield
Richardson, Mary E., 59 Walnut St., East Dedham
Riese, Helen M., Cornish School, Plymouth
Rogers, Martha A., 88 Chestnut St., Lynn
Russ, Sarah A., Thomas K. Rodman School, New Bedford
Salmon, John J., 27 Blake St., Cambridge
Sampson, Elizabeth H., Clifford Rd., Plymouth
Sauer, Edith, Kensington Avenue School, Springfield
Sears, Louise B., 9 Williams St., Taunton
Seward, Elsie P., Crosby School, Arlington
Silva, Theodore R., Adams School, Quincy
Small, Lillian G., Lewis School, East Lynn
Smith, Ella H., Fulton School, Medford
Southmayd, Pearl A., 15 Armory St., Springfield
Starkey, Netty A., 7 Moore Ave., Worcester
Stone, Edith E., 10 Lyman Ter., Waltham
Stott, Helen Maud, 38 Crescent St., Franklin
Stuart, Pauline H., 61 Harlow St., Arlington
Sullivan, Annie G., 349 Whipple St., Fall River
Sullivan, Maude H., Houghton School, North Adams
Swasey, Marion H., 58 Maple St., New Bedford
Sweeney, Agnes G., Curtis School, Medford
Sweeney, Margaret E., 73 Main St., Quincy
Sweet, Emily, 22 Hammond St., Waltham
Taylor, Charles H., 345 Harvard St., Brookline
Tobin, Margaret, Union School, Littleton
Todd, Wilfred E. L., Oxford Street School, Worcester
Towne, Lillian M., 15 Barrows St., Allston
Wainwright, Lottie W., 533 Broadway, Fall River
Washburn, Anna C., 3 Mt. Vernon St., Melrose
Wentworth, Florence A., 298 Elm St., Walpole
Wheeler, Harriet E., 62 Sever St., Worcester
Willard, Addie I., Edward B. Newton School, Winthrop
Williams, Winnie M., 2 Lefavour Ave., Beverly
Wilson, Mary E., North Main St., Oakland
Wilson, Sara E., 25 Crandall St., Adams
Wingate, Louise, State Teachers College, Fitchburg
Wood, Francis O., 72 Whittier Rd., Medford
Woodward, Mrs. Lovina H., Lawrence Street School, Framingham
Yeomans, Rosanna, 118 Atlantic Ave., Revere

MICHIGAN

Alt, Mary A., 1120 S. Beaumont, Detroit
Anderson, Jennie, Oak Grove Club, Flint
Arehart, Ira J., 11315 Rosemary Ave., Detroit
Armstrong, Donald C., Higgenbotham School, 20119 Wisconsin, Detroit
Atkinson, F. H., Ford School, Highland Park
Bachmann, Sophie C., Majeske School, 2139 Trombly Ave., Detroit
Bacon, Meda, 731 Lafayette Ave., S. E., Grand Rapids
Bader, Edith M., High School, Ann Arbor
Baird, James, Lingemann School, 567 Montclair Ave., Detroit
Baker, Guy L., 210 W. Parent St., Royal Oak
Baker, Helen T., 3322 Carter, Detroit
Bateman, Grace N., 1670 Calvert Ave., Detroit
Bates, Guy, Davison School, 2800 E. Davison Ave., Detroit
Bates, Warner J., Pulaski School, Hamtramck
Beattie, Grace E., 1413 Field, Detroit
Bechtold, R. H., Longfellow School, Flint
Beck, Carl G., 11846 Wilshire Ave., Detroit
Belisle, John H., Winterhalter School, 12121 Broad St., Detroit
Bessolo, A. Donn, Ford School, 14735 Orangelawn, Detroit
Birkam, George, Coolidge School, 12700 Woodmont Ave., Detroit
Birtch, Ora M., 2521 Riverside Dr., Trenton
Bolton, Frederick, 4650 Braden, Detroit
Booth, Evelyn, 70 Alger Ave., Detroit
Boston, Fannie E., 587 Emerson Ave., Detroit
Bott, Helen, 3917 McClellan, Detroit
Bowles, Maude, 2020 Myrtle, Detroit
Bradley, Mrs. Fanny, Kearsley Street School, Flint
Broehm, Clara, 4846 Trenton, Detroit
Browe, Herman, 9220 Olivet, Detroit
Browe, Walter, 6420 McGraw, Detroit
Brown, Mary M., 5536 St. Antoine, Detroit
Buckley, Dorothy, 1429 S. W. Ave., Ann Arbor
Burgwin, Mignon, 4045 29th St., Detroit
Burns, Hortense E., Moore School, 1000 Alger St., Detroit
Burt, Ethel V., 16611 Lawton Ave., Detroit
Bushnell, Nina M., 507 Thomson St., Flint

Campbell, Charlotte, 100 Glynn Court, Detroit
Carpenter, Mrs. Theodocia, 12 Portsmouth Pl., Grand Rapids
Carroll, Mae B., 1651 Atkinson Ave., Detroit
Carter, Winifred J., 6230 Plainview, Detroit
Caswell, Inez E., R. F. D. 2, Birmingham
Charbonneau, Anna M., 1330 Abbot, Detroit
Clark, Retha M., Oak Grove Club, Flint
Cleveland, J. Arlene, John P. Wilson School, Pontiac
Clow, Jennie M., 8411 E. Forest, Detroit
Coates, Elizabeth M., 2705 Lapeer St., Flint
Collar, Lovina, Holbrook School, Hamtramck
Cousins, Esther J., 3318 Whitney Ave., Detroit
Craddock, Susan J., 537 Adelaide, Detroit
Crane, Mrs. Mary E., 1592 Fifth St., Muskegon
Creswell, Grace, 2464 Lothrop St., Detroit
Cross, Sydnie M., 13130 Grove, Detroit
Crysler, Rose, 144 Longwood Ave., Detroit
Culhane, Josephine, 1123 Lyon St., Flint
Curtis, Eva M., 1030 Grand Traverse, Flint
Curtiss, Dale, 14034 Abington St., Detroit
Curtiss, Florence E., 205 Tuxedo, Detroit
Davis, Irene C., 2332 Tuxedo, Detroit
Davison, Ethel, Houghten School, 16745 Lamphere, Detroit
Dawson, Edwin, 11112 Outer Dr., Detroit
DeManigold, Mary L. G., 1031 Wayburn Ave., Detroit
Derr, Howard D., 825 Mill St., Lincoln Park
Dixon, Walter E., 4846 Trenton Ave., Detroit
Doherty, Mary C., 12744 Elmira, Detroit
Doonan, Gerald J., 524 Manistique St., Detroit
Doyen, Gertrude, 421 W. Grand Blvd., Detroit
Eaton, Ruth, 125 Carmel St., Kalamazoo
Eck, Ruth J., 112 Philadelphia E., Detroit
Egan, Nora L., 2672 W. Grand Blvd., Detroit
Egeler, Ethel, Harms School, 2400 Central, Detroit
Elliott, Myrtle A., 1037 Ashmun St., Sault Ste. Marie
Ellis, William A., 2700 Clinton, Detroit
Ellsworth, Bert B., Ives School, 1146 Philip St., Detroit
Engle, Erma, 5161 Charles, Detroit
Estabrook, Eudora P., Diamond School, Grand Rapids
Fairbairn, Marion D., Ellis School, 5611 Rich St., Detroit
Falvey, Stella K., 1471 Maple, Detroit
Farr, Helen, Robinson School, 17500 Grover, Detroit
Fee, Lena M., 710 S. Oakley, Saginaw, W. S.
Forner, Robert R., 3211 Hazelwood, Detroit
Frederick, Magdalene, Quarton School, Birmingham
Froelich, Dorothea E., 219 N. Center St., Royal Oak
Gasner, Mrs. Helen M., Garrison School, Dearborn
Geer, Florence E., 3006 Field, Detroit
Gibbons, Jane Winifred, 421 Church St., Ann Arbor
Gifford, Ilah B., 15600 State Fair Ave., E., Detroit
Gilday, Jane A., McFarlane School, Detroit
Gladden, Theron A., 1255 State Fair Ave., E., Detroit
Gonne, Edythe, 2281 W. Grand Blvd., Detroit
Graham, Albert, 7840 Wagner Ave., Detroit
Graham, James R., Richard School, 13840 Lappin St., Detroit
Greene, Myrtle, 230 Fifth St., Jackson
Guild, Ella M., Oak Grove Club, Flint
Haley, Nelle, 920 Court St., Saginaw, W. S.
Hall, Isabell, 288 Josephine Ave., Detroit
Hamilton, Esther, Pattengill School, 8411 Northfield, Detroit
Hanlon, Eunice M., 15369 Gilchrist, Detroit
Hardie, Frances S., 8646 Fullerton Detroit
Hardie, Katherine 2170 Jefferson Ave., E., Detroit
Harris, Zita, 8710 Radford, Detroit
Harrison, Mrs. Florence, 1016 Ann Arbor St., Flint
Hartung, Urban, Jr., Burt School, 20710 Pilgrim Ave., Detroit
Hedrick, Ethel D., Philip Bach School, Ann Arbor
Herrig, Isabella W., 822 Adams St., Saginaw, W. S.
Hilborn, Mrs. Clara M., 2005 Francis Ave., Flint
Hoag, Grace S., 3329 Wabash St., Detroit
Holland, Mary, 4320 Cortland, Detroit
Iorton, Mrs. Jeannette, Garfield School, Superior Blvd., Wyandotte
Hosner, Marion, 7337 Woodrow Wilson, Detroit
Hubbard, Evelyn B., Monteith School, 1091 Hibbard Ave., Detroit
James, Elsie E., Dewey School, Flint
Jose, Mamie, 301 Summit Ave., Jackson
Kelly, Mary M., 301 W. Third Ave., Flint
Kemp, Maude E., 2704 Calvert Ave., Detroit
Kerwin, S. Theel, 19030 Wildemere, Detroit
Ketcham, Alice E., 55 Highland Ave., Highland Park
Kilander, Mrs. Pansy, 14149 Coyle Ave., Detroit
Knighton, Edward J., 16411 Curtis, Detroit
Koopman, G. Robert, Toppen School, Ann Arbor
Krug, Marguerite C., 2270 Leslie, Detroit
Lamport, Harold B., 12541 Second Ave., Highland Park
Lang, Marion M., 533 E. Mt. Hope Ave., Lansing
Livie, Edna B., 2281 W. Grand Blvd., Detroit
Lockwood, Glenn O., Ann Visger School, River Rouge
McCallum, Jessie, 2694 Philadelphia, W., Detroit
McCarthy, Julia M., 6920 Sylvester, Detroit
McConnell, Clara E., 670 Pingree Ave., Detroit
McCoy, Margie L., J. B. Ford School, Hudson St., Wyandotte
McEwen, Vera D., 4800 Collingwood St., Detroit
McGoldrick, Mary, 1237 Trumbull Ave., Detroit
McGowan, Margaret C., 2535 Atkinson Ave., Detroit
McGreevy, Genevieve, 1201 25th St., Detroit

McGregory, Lotta V., 605 Hazelwood Ave., Detroit
McGuinness, Mae E., 73 Palmer E., Detroit
McKinney, Rachel, 5468 Stanton Ave., Detroit
McLeod, Lena E., Cook School, Flint
McMahon, Rachel, 13185 Pinehurst, Detroit
McSweeney, Mary C., 4240 Buena Vista, Detroit
McVean, Gertrude, 327 Perry St., Pontiac
Mackay, Mary B., 2531 Calvert, Detroit
Maher, Anna J., 2592 Coplin, Detroit
Mahony, Mary M., Norvell School, 2963 Arndt St., Detroit
Marshall, Irene, 8840 Second Blvd., Detroit
Messner, Clarence J., Richard School, 130 McKinley, Grosse Pointe
Monroe, Thomas, 8745 Dumbarton, Detroit
Montgomery, Rhoda, 4058 Clements St., Detroit
Morley, Lillian C., 42 Willis Ave., E., Detroit
Moss, Helen A., 919 Lapeer St., Flint
Murphy, Anna E., School No. 2, Ecorse
Netzorg, Sadie, 12115 Griggs Ave., Detroit
Nyman, Alfreda, 129 S. Mansfield St., Ironwood
O'Harrow, Ina, 10 Moss Ave., Detroit
Page, Florence, 11870 Ohio, Detroit
Parker, Florence, 5474 Trumbull, Detroit
Pascoe, May F., 515 W. Newall, Flint
Pearl, Norton H., 11624 Wisconsin, Detroit
Pearson, Mrs. Carolyn A., 321 E. Newell St., Flint
Peatling, Ella M., 1524 Clairmount, Detroit
Pickett, Mrs. Lillian H., 111 W. Baker St., Flint
Plumb, Alberta E., 3224 E. Genesee Ave., Saginaw, E. S.
Popp, Mrs. Cleo E., Hazeltine School, Flint
Potter, Mrs. Frances, 1952 Gratiot, Saginaw, W. S.
Randall, Leo M., 1464 E. Congress St., Detroit
Read, Mabel, 411 Pine St., Kalamazoo
Reardon, Anna T., 306 N. Linn, Bay City
Reaume, Rhoda, 6141 Stanton Ave., Detroit
Redden, John E., 14320 St. Marys, Detroit
Redman, Mabel M., 75 Avalon Ave., Detroit
Reekie, Clara B., 3310 Vinewood, Detroit
Reynolds, O. D., Ruthnuff School, 6311 W. Chicago Blvd., Detroit
Rietzkat, Bertha, 3379 Scovel, Detroit
Rietzkat, Marie B., 3379 Scovel Pl., Detroit
Robison, Alice E., 103 Hazelwood Ave., Detroit
Roethke, Louise, Clippert School, 4725 Martin Ave., Detroit
Rogers, Alex R., 14317 Hubbell Ave., Detroit
Rogers, Esca B., 121 Arbor St., Kalamazoo
Rosenthal, Aimee A., 8821 Georgia St., Detroit
Rouse, Jessie H., 2503 S. Washington Ave., Saginaw, E. S.
Rudduck, Lillian W., 5670 Missouri Ave., Detroit
Schoolcraft, Pearl T., 1430 Hillcrest Ave., Kalamazoo
Shattuck, Alice B., Baldwin School, Pontiac
Shaw, Edith E., 6533 16th St., Detroit
Sheahan, Stella, 4311 Avery, Detroit
Sheridan, Margaret E., 1727 Glynn Court, Detroit
Short, Mrs. Mabelle I., Washington School, Flint
Sigler, Mrs. Lou I., 1413 Bates St., S. E., Grand Rapids
Smith, Hattie, Longfellow School, Royal Oak
Smith, Mrs. Mildred, 1050 Hibbard, Detroit
Spooner, Janet, 13210 Main, Detroit
Stauch, Rose K., 3390 Norwalk Ave., Hamtramck
Steeds, Ivah, 8509 Dexter Blvd., Detroit
Steele, Frank N., 615 West End, Detroit
Stevens, Roy W., 561 Brady, Detroit
Strickland, Rena M., 616 W. Fourth Ave., Flint
Sweeney, Angela, 651 Forest, E., Detroit
Thomas, John S., 4375 Buena Vista, W., Detroit
Tucker, Ethel M., Mason School, Vernier Rd., Grosse Pointe Park
VanAdestine, Gertrude, 6045 Stanton, Detroit
Vandenbergh, Ora H., Hutchinson School, 5221 Montclair, Detroit
VanGallow, Helen, 8575 Dumbarton, Detroit
Voorhees, James H., 3801 Pasadena Ave., Detroit
Warner, Frances L., 881 Collingwood Ave., Detroit
Waterman, Wyla, Oak Grove Club, Flint
Waugh, Nellie, 13538 Mendota, Detroit
Weber, Ernest, Training School, Richland
Weidman, Agnes A., 11352 Belleterre, Detroit
Welch, Elizabeth, 340 Ash St., Flint
Welte, Adeline K., 1203 Bement St., Lansing
Weter, Grace E., 513 S. Troy St., Royal Oak
Willits, Charlotte A., 11730 Turner St., Detroit
Wilson, Adelaide M., Sherrill School, 7300 Garden St., Detroit
Wilson, Claudia, 10225 Third, Detroit
Wilson, Grace, Oak Grove Club, Flint
Winslow, Catherine M., Tilden School, 1314 Kirby, W., Detroit
Woody, Clifford, School of Education, University of Michigan, Ann Arbor
Woolfenden, Elizabeth, Leland School, 1395 Madison Ave., Detroit
Woolfenden, Grace F., Oakman School, 12920 Wadsworth, Detroit
Wuennecke, Laura, Ferry School, Grand Haven
Yager, Gretchen J., 2524 VanAlstyne Blvd., Wyandotte
Yokom, Merle C., 1471 Maple, Detroit
Young, Dorah, Clark School, Flint

MINNESOTA

Boysen, Mrs. Agness, Lyndale School, 34th and Lyndale Ave., Minneapolis
Bradseth, Alice M., 1127 E. Sixth St., Duluth
Brezler, Anne, Garfield School, Minneapolis
Buell, Caroline, 679 Lincoln Ave., St. Paul
Butler, Margaret F., Webster School, St. Albans and Holly Ave., St. Paul
Dosdall, Bertha A., 1332 Dayton Ave., St. Paul
Farmer, Mrs. Lillis E., Box 693, Gilbert
Frank, Sigrid M., Irving School, West Duluth
Frederickson, Mrs. Claire L., Howe School, 43rd Ave. S. and E. 38th St., Minneapolis

Garrison, Harry A., Prescott School, Minneapolis
Golla, Ruth V., Central School, Grand Rapids
Hamilton, Katherine, Dept. of Education, City Hall, St. Paul
Hansen, Meta, McKinley School, 37th and Colfax Ave., N., Minneapolis
Harger, Lena L., 4235 Grimes Ave., S., Minneapolis
Herrly, Dora J., Forest Lake School, Grand Rapids
Holtz, Jennie F., Irving School, 17th Ave., S. and 28th, Minneapolis
Keckefoth, Ethel H., Washington School, Eighth Ave. and Sixth St., S., Minneapolis
Kensinger, Floy, 1422 E. Third St., Duluth
King, Margaret M., 842 Laurel Ave., St. Paul
Kirk, A. W., Jackson School, Edmund and Arundel Sts., St. Paul
Kirk, H. H., High School, Faribault
Larkin, Jane V., 46 N. Hamline Ave., St. Paul
Lichtenberger, James F., Morris Park School, Minneapolis
McAlister, Gladys M., 905 W. 44th St., Minneapolis
Mallory, Blanche, 715 E. First St., Duluth
Mather, Helen, 2011 Third Ave., S., Minneapolis
Nelson, Anna B., 101 S. 19th Ave., E., Duluth
Neville, Mrs. Blanche C., 164 Montrose Pl., St. Paul
Nyhus, Ellen, Clara Barton School, Minneapolis
Porcher, Maria R., 3549 Dupont Ave., S., Minneapolis
Probst, Ella, 4836 S. Lyndale, Minneapolis
Rains, Floyd O., Public School, Pipestone
Ralph, Mrs. Jessie F., 4405 Aldrich Ave., S., Minneapolis
Reed, Myrtle, Monroe School, Minneapolis
Reichard, Clifford E., Pillsbury School, Minneapolis
Riedell, Adaline M., John Ericsson School, 31st Ave. S. and 43rd St., Minneapolis
Ringdahl, N. Robert, 3220 Tenth Ave., S., Minneapolis
Rinkel, Caroline, 310 Ave. C, Cloquet
Sherwood, Grace B., 3532 Second Ave., S., Minneapolis
Smith, Dorothy D., Tracy
Steffensrud, E. R., Washington-Lincoln Schools, Chisholm
Stanley, Elizabeth A., Holland School, Minneapolis
Strate, Nettie M., 3032 Colfax, S., Minneapolis
Taylor, Edith B., 1430 W. Minnehaha St., St. Paul
Wallar, Beulah H., Greeley School, 26th St. and 12th Ave., S., Minneapolis
Weld, Paul A., Cobb Cook School, Hibbing
White, Zada A., 107 W. 52nd St., Minneapolis
Whitman, Jessie L., 115 S. Victoria St., St. Paul
Young, Leonard, 226 W. First Ave., E., Duluth

MISSISSIPPI

Archer, Ellie, Witherspoon School, Meridian
Blackwelder, D. L., East McComb School, 313 Easy St., McComb
Bourdeaux, Annie, Poplar Springs School, Meridian
Brown, Virginia, South Side School, Meridian
Callaway, R. M., Grammar School, Pocahontas
Dempster, Alice, 1607 24th Ave., Meridian
Dickins, Hattie, Grammar School, Leland
Doolittle, Laurie, 44 Victoria Ave., Cleveland
Duling, Lorena, 718 N. Congress, Jackson
Gaston, Evelyn, Tuxedo School, Meridian
Henderson, Mary, 3219 24th Ave., Meridian
Horn, Lizzie, Elementary School, Grenada
Houston, Gabriel, 111 W. Second St., Clarksdale
Lester, Laura R., Woodlawn, R. F. D. 5, Jackson
Majure, Ursula, Highland School, Meridian
Marshall, Letitia, Clay Street School, Vicksburg
Marshall, Mary R., 121 E. Main St., Charleston
Milner, Bessie, 720 E. Beach, Gulfport
Mounger, Lurline, 119 W. Second St., Clarksdale
Owings, J. H., Oakland Heights School, Meridian
Smith, Irene, Chalk School, Meridian
Stewart, E. B., The Consolidated School, State Line
Stokes, Mary M., Box 344, Columbus
Thornton, Mattie, Marion Park School, Meridian
Turner, Mrs. T. A., Box 227, Greenwood
Varnado, Effie, 612 Washington St., Greenwood

MISSOURI

Andrews, F. E., 900 E. Argonne, Kirkwood
Annin, Mrs. Anna W., 3815 McCausland Ave., St. Louis
Aydelott, Clarence R., 2338-A Arkansas Ave., St. Louis
Baker, Beulah N., 5031 Potomac St., St. Louis
Barbee, F. H., Board of Education, St. Joseph
Barley, Ida L., 3638 Summit, Kansas City
Bender, Ethel D., 5 Hillcrest, Kirkwood
Betton, Florence, Askew School, 2630 Topping, Kansas City
Beumer, Edward H., 646 N. Kirkwood Rd., Kirkwood
Bick, Anna, 2842-A Victor St., St. Louis
Blackburn, Lulu, Benjamin Harrison School, Kansas City
Blankenship, Amelia A., 520 Westgate Ave., St. Louis
Blomfield, Ray V., 1821 Clay St., St. Joseph
Boyd, Anna B., 5330 Pershing Ave., St. Louis
Bracken, John L., Supt. of Schools, Clayton
Brand, Mrs. Bessie, 1229 Amherst Pl., St. Louis
Brossard, Julia E., 240 W. Argonne Dr., Kirkwood
Brown, Charles H., Marshall School, 4342 Aldine St., St. Louis
Buchanan, William D., 5511 Vernon Ave., St. Louis
Burke, Mary J., 5321 Harrison St., Kansas City
Campbell, Cora, Bancroft School, 4300 Tracy Ave., Kansas City
Campbell, E. G., Forest Park Hotel, St. Louis
Capp, Theresa I., 2531 Faraon St., St. Joseph
Chiles, E. E., Harrison School Patron's Assn., 4163 Green Lea Ave., St. Louis
Collins, Anne J., 4974 Lotus Ave., St. Louis

Cox, Henley L., 2139 E. 24th St., Kansas City
Craig, Santa Maria, 1024 Pennsylvania Ave., Kansas City
Cramer, Roscoe V., Switzer School, Kansas City
Creek, E. G., 813 N. 24th St., St. Joseph
Crosby, Clifford, 31 Oak Ter., Webster Groves
Cullen, Blanche P., 5730 Pushing, St. Louis
Cusack, Alice M., Board of Education, Kansas City
Dolan, Elizabeth, Mark Twain School, 3850 E. 60th St., Kansas City
Dougan, L. M., Field School, St. Louis
Drayer, H. C., 6933 Columbia Ave., University City
Egan, Mrs. Anna H., 4111 Warwick Blvd., Kansas City
Elliott, Mrs. Elsie M., 970 Prospect Ave., Springfield
Evans, Fannie M., 2102 N. Rogers Ave., Springfield
Falke, Clara, William Rockhill Nelson School, 5228 Charlotte, Kansas City
Flaven, Mary E., Clay School, 716 Ewing, Kansas City
Fleming, C. L., 3655 Humphrey St., St. Louis
Foristel, Margaret S., Taussig School, 1540 S. Grand Ave., St. Louis
French, Louise G., Karnes Opportunity School, 550 Charlotte, Kansas City
Gaines, I. A., 604 Bonita Ave., Webster Groves
Gartenbach, Margaret, Peabody School, St. Louis
Gidinghagen, Walter, Humboldt School, 714 E. 11th St., Kansas City
Girault, Leonide M., Woodward School, 725 Bellerive Rd., St. Louis
Godbey, Walter A., 3825 Utah Pl., St. Louis
Gooch, E. L., 2303, Big Bend, Maplewood
Goode, Lenna, Frances Willard School, 5010 Garfield, Kansas City
Goslin, W. E., High School Bldg., Webster Groves
Green, G. H., 6189 Kingsburg Blvd., St. Louis
Griffin, Margery M., Clay School, 3820 N. 14th St., St. Louis
Hamilton, Mrs. Alva R., Horace Mann School, Kansas City
Hamilton, Edward D., Simmons School, 4306 St. Louis Ave., St. Louis
Hamilton, Mrs. Sarah T., 101 Tiffin Ave., Ferguson
Harris, A. H., 1010 Virginia Ave., Kansas City
Henderson, Barbara, Rockhill Manor, Kansas City
Hickey, P. J., Madison School, 1118 S. Seventh St., St. Louis
Hill, Stanley, 4038 Palm St., St. Louis
Hoffman, Dora E., 5446 Harrison, Kansas City
Holliday, Frances, 115 W. Ninth St., Maryville
Holtzapple, Lily Jane, 1719 Bellevue Ave., Richmond Heights, St. Louis
Hood, E. A., 6131 Southwest Ave., St. Louis
Hooker, Minnie L., Armour Plaza, 1216 E. Armour, Kansas City
Hooss, Ida M., 5600 Pershing Ave., St. Louis
Howard, J. E., DeMun School, DeMun and Northwood, St. Louis
Howe, Jennie C., Blenheim School, 71st and Olive, Kansas City
Jackson, Euris J., Cote Brilliante School, 2616 Cora Ave., St. Louis
Johnson, W. H., 6839 E. 15th St., Kansas City
Jones, Clara F., Samuel Cupples School, 4908 Cote Brilliante Ave., St. Louis
Jones, Virginia, 4208 E. 63rd St., Kansas City
Kearney, Rollena, Mercy Hospital, 3912 Terrace, Kansas City
Kerns, Nancy M., 4246 Agnes St., Kansas City
Knox, Eloise, 4600 Mill Creek, Kansas City
Langston, John M., 2354 Michigan Ave., St. Louis
Large, Grace M., 6236 Waterman Ave., St Louis
Lewis, Nellie K., 3863 Juniata, St. Louis
Lovelace, Abigail, 4026 S. Benton, Kansas City
Lyon, Percy A., Scullin School, St. Louis
McCallister, Mabel, 3238 Marshall Ave., St. Louis
McCaslin, E. E., 5027 Washington Ave., St. Louis
McMillan, Helen, 712 E. 33rd St., Kansas City
Mack, Inez L., 11 Brookside Blvd., Kansas City
MacKay, James L., 573 S. Clay Ave., Kirkwood
Marston, C. E., 343 S. Lawn Ave., Kansas City
Martin, Arthur E., 3821 Bellefontaine, Kansas City
Martin, William H., James School, 5810 Scarritt Ave., Kansas City
Melcher, George, Supt. of Schools, 201 Library Bldg., Kansas City
Miller, William F., 331 E. College St., Aurora
Milster, Ben C., 5428 Holly Hills Ave., St. Louis
Moore, Mary, 2809 Sacramento St., St. Joseph
Morris, A. C., 504 Ridgeway, Independence
Morrison, A. F., Froebel School, 4133 Magnolia, St. Louis
Mumm, Emma O., 1027-A Felix St., St. Joseph
Nelson, Minnie, 1315 N. Tenth St., St. Joseph
Neville, Lucy B., Girls Parental Home, Independence
Nicholson, Nell Grant, 6410 San Bonita Ave., St. Louis
O'Brien, Kate E., 5418 Thekla Ave., St. Louis
O'Connell, May, J. C. Nichols School, 69th and Oak, Kansas City
Osborne, John F., Thacher School, 5008 Independence Ave., Kansas City
Patterson, M. J., 319 Westover Rd., Kansas City
Peterman, May B., 1403 Edmond St., St. Joseph
Peters, Alvina, 2226 Shenandoah, St. Louis
Pitcher, Stephen L., 7144 Washington Ave., St. Louis
Propst, Katharine, Weaver School, Springfield
Purnell, John H., 4306 St. Louis Ave., St. Louis
Rhetta, H., 4541 Garfield, St. Louis
Richmond, H. C., Faxon School, 3710 Paseo, Kansas City
Robeson, James A., 4147 Montgall Ave., Kansas City
Rossi, Mrs. Helen D., Flynn Park School, 7220 Waterman Ave., University City
Roth, F. G., 5029 Devonshire, St. Louis
Schmitz, Alvina, 1014 Felix St., St. Joseph
Sellman, W. N., Wyman School, 1547 S. Theresa Ave., St. Louis

Sexton, L. J., Ames School, St. Louis
Shewman, W. D., 853 Atlanta Ave., Webster Groves
Shores, Roscoe V., Public Library Bldg., Kansas City
Smith, Margaret J., 2001 Main St., Lexington
Smoot, Lucy, 4011 Baltimore, Kansas City
Smoot, Viola, 2118 Byers Ave., Joplin
Stafford, Bertha, 448 E. Elm, Springfield
Stephens, C. E., 5550 Page Ave., St. Louis
Steuber, F. J., Rose Fanning School, 3417 Grace Ave., St. Louis
Stone, Virginia E., Community School, 400 DeMun Ave., St. Louis
Strachan, Lexie, Public Library Bldg., Ninth and Locust Sts., Kansas City
Strickler, R. E., 2748 Henrietta St., St. Louis
Thomas, Miles C., Border Star School, 6821 Wornall Rd., Kansas City
Thompson, Mary A., 1111 McCausland Ave., St. Louis
Todd, William Hall, 2606 Louisiana Ave., St. Louis
Townsend, L. G., Whittier School, 1101 Indiana, Kansas City
Trice, Daisy M., 1921 E. 24th St., Kansas City
Trumbo, Mabel, 3222 Lexington Ave., Kansas City
Vining, Frances L., Allen School, 706 W. 42nd St., Kansas City
Wahlert, Jennie, 2918 Harper, St. Louis
Wells, Mrs. Annie L., 1 Summit Pl., St. Joseph
Wells, Jessie O., 4337 W. Belle, St. Louis
Whitney, Lucy G., 416 Garland St., Kansas City
Wilcox, Walter E., 5728 Julian Ave., St. Louis
Williams, Edward S., Banneker School, 2840 Lucas Ave., St. Louis
Wilson, Albert M., 3630-A Shaw Blvd., St. Louis
Witter, Charles E., 5182 Maple Ave., St. Louis
Wolfe, Inez M., 3415 Euclid Ave., Kansas City
Woods, Willrene E., 4191-A Enright Ave., St. Louis
Young, Myrtle M., 3012 Bellefontaine, Kansas City
Zimmerman, Lester L., 6102 Washington Ave., St. Louis
Zimmerschied, Ada, 3000 DeGroffway, Kansas City

MONTANA

Anderson, Katherine, Stuckey Apts., Great Falls
Calhoun, May M., 310 Yellowstone, Billings
Chamison, Goldie, 625 W. Granite St., Butte
English, Mrs. Lillian, 536 Third Ave., E., Kalispell
Flores, Mrs. Zella K., Lincoln and Garfield Schools, Lewistown
Hill, John L., Box 767, Lewistown
Kelley, Isabel, Apex Hotel, Butte
Lausted, Alice, 205 N. 26th St., Billings
Lewis, H. P., Supt. of Schools, Conrad
Miller, Ruby A., Supt. of Schools, Choteau
Neal, Russell Leroy, Randall Apt., Missoula
Schaefer, M. Louise, 120½ Tenth St., N., Great Falls
Thompson, Grace M., McKinley School, Great Falls

NEBRASKA

Austin, Mary N., Miller Park School, 28th and Ellison, Omaha
Beal, Mamie G., 2514 B St., Omaha
Bedell, Bess C., 630 Park Ave., Omaha
Benthack, Emil, Supt. of Schools, Broken Bow
Blackmore, Ida, Park School, 29th and Woolworth, Omaha
Bracken, Angeline, Druid Hill School, 31st and Spaulding Sts., Omaha
Bratton, Mrs. Anna M., 3200 Center St., Omaha
Brooker, Florence, Adams School, Omaha
Burnham, Archer L., Supt. of Schools, Scottsbluff
Carney, Julia, Corrigan School, Omaha
Chapman, Johannah, 1141 S. 30th Ave., Omaha
Clark, Mrs. Mae. T., 703 W. 15th St., Grand Island
Compton, Maude, Highland School, Omaha
Craig, Nell, 3115 Creighton Ave., Omaha
Eldridge, Ethel G., Garfield School, 16th and H Sts., Omaha
Ellett, Virginia, 4814 Webster St., Omaha
Fay, Gaynelle, Monroe School, Omaha
Ferguson, Grace L., 910 W. Second, Grand Island
Forsyth, Fannie, Windsor School, Omaha
Foster, Mary E., West Side School, 32nd and U Sts., Omaha
Grant, Josephine, Castelar School, 18th and Castelar Sts., Omaha
Griest, Mary Ruth, Train School, Omaha
Gross, Frances, Saratoga School, Omaha
Hamilton, Margaret, 519 N. 40th St., Omaha
Healey, Anna T., 103 Morris Apt., Omaha
Holmes, Stella, Bancroft School, Omaha
Isakson, Edith, Central Grade School, Omaha
Jackson, Alta M., 2839 N. 46th St., Lincoln
Longsdorf, Helen M., Beals School, Omaha
Lynn, Ethel A., 3111 Davenport St., Omaha
McCumber, Pearl, Clifton Hill School, 45th and Maple Sts., Omaha
McGee, R. R., Kramer High School, Columbus
McNamara, Mary, Benson High School, Omaha
Mathews, Mrs. Lulu B., Comenius School, 16th and William St., Omaha
Matthews, Marie, Saunders School, Omaha
Mills, Mrs. Clara S., E. Rosewater School, Omaha
Myers, Fannie, Mason School, Omaha
Newell, Ethel, Sherman School, Omaha
Newlean, Jeannette, 914 S. 36th St., Omaha
O'Toole, Margaret K., Lothrop School, Omaha
Partridge, Edith A., 301 S. 33rd St., Omaha
Pearson, Emelia, Minne Lusa School, 28th Ave. and Ida St., Omaha
Peterson, Mrs. Alice C., Dundee School, Omaha
Pickard, Anna B., Vinton School, Omaha
Pollock, Ruth, 2878 Newport Ave., Omaha
Pyrtle, E. Ruth, Bancroft School, Lincoln
Rasmussen, Maren, Madison School, Omaha
Reap, Edna M., 817 S. 33rd St., Omaha
Reed, Mabel L., 4229 Douglas St., Omaha
Robey, Gertrude, 2134 Park St., Lincoln
Roys, Cassie F., 2609 Bristol St., Omaha
Slocum, June M., 4512 S. 22nd St., Omaha
Smith, Mrs. Elsie M., 5612 Florence Blvd., Omaha
Smith, Maud M., 4904 Underwood Ave., Omaha

Thoelecke, Bertha, Monmouth Park School, Omaha
Thompson, Helen L., Lake School, Omaha
Waterman, Mrs. Edna H., Field School, Omaha
Weldon, Dossie D., 1703 W. Keonig, Grand Island
Wetzel, Marie C., 192 Drake Court, Omaha
Wilson, Clara O., Teachers College University of Nebraska, Lincoln

NEVADA

Black, Mary S., Elementary School, Battle Mountain
Knudson, K. O., 216 N. Sixth St., Las Vegas

NEW HAMPSHIRE

DeGross, Mary E., 263 Rockland St., Portsmouth
Dunnington, Nellie F., 569 Hanover St., Manchester
Goodwin, Alice D., Public School, East Rochester
Gray, Wayne Sherman, 92 Main St., Pittsfield
Hicken, Blanche E., 81 Penacook, Manchester
Janvrin, Charles F., South Junior High School, Seabrook
Lewis, Della I., 145 Clinton St., Concord
Merriam, Mrs. Agnes, Box 506, Groveton

NEW JERSEY

Adams, A. Virginia, East Avenue School, Vineland
Atkinson, Bertha I., 103 Linden Ave., Pitman
Baker, Marion S., School No. 3, Ft. Lee
Barnes, Thomas L., 39 New St., East Orange
Bert, Reese E., Public Schools Nos. 2 and 10, Belleville
Bigelow, Merrill A., 163 Williamson Ave., Bloomfield
Boland, Teresa M., Pierrepont School, Rutherford
Boney, C. Dewitt, 330 Central Ave., East Orange
Bosshart, John H., Supt. of Schools, South Orange
Bourlier, Mrs. Helen T., 93 Johnson Ave., Hackensack
Bowers, Ray L., Longue Vue, Lincoln Park
Bradenburg, Edna A., Brayton School, Summit
Brady, William, Washington School, 175 Sanford St., East Orange
Brearley, Mrs. Helen C., 57 Princeton Ave., Princeton
Brinkerhoff, George I., Webster Street, Newark
Brooks, Robert P., 347 E. 37th St., Paterson
Brown, Gladys D., Lincoln School, Dunellen
Bryan, H. Eloise, Westfield Public School, Riberton
Bryson, Jennie V., 610 N. Fifth St., Camden
Buchanan, Margaret, 53 S. Windsor Ave., Atlantic City
Budd, Francis H., Franklin School, Newark
Burt, Margaret J., School No. 1, Glen Rock
Burton, Hilda B., Junior Elementary School, Palisades Park
Bush, Fred S., Fairview School, Bloomfield
Bustard, Joseph L., Chestnut Street School, Roselle
Cadoo, Sarah Elizabeth, 5 Parmley Pl., Summit
Cassel, Lloyd S., Supt. of Schools, Freehold
Cassidy, Mabel M., 341 Union St., Jersey City
Clark, Mrs. Marion T., Garfield School, Long Branch
Cline, Anne V. A., 115 Francisco Ave., Rutherford
Cole, Alice K., 429 Grier Ave., Elizabeth
Conners, Mary F., Mott School, Centre St., Trenton
Cooper, Anne L., Madison Avenue School, Atlantic City
Cornish, Hubert R., School No. 4, Clinton St., Paterson
Cousins, Esther M., Witherspoon School, Princeton
Crane, J. Ernest, Summer Avenue School, Newark
Cressman, Alice M., 128 Chestnut St., Rutherford
Currie, Mrs. G. F., Englewood Cliffs School, Coytesville
Dengler, C. F., 831 Parry Ave., Palmyra
Dennis, Emma, 30 Marion St., Trenton
DeRøismes, Mrs. May B., Madison-Monroe School, Elizabeth
Dietz, Charles E., School No. 3, Main St. near Slater St., Paterson
Dix, William L., Jefferson School, Brunswick Ave., Trenton
Dobbins, Margretta, Athenia School No. 6, Clifton
Dolan, John J., Longfellow School, Oakdene Ave., Teaneck
Dorsey, Belle E., School No. 1, State St., Perth Amboy
Dowling, Verna, 114 S. Broad, Penns Grove
Dransfield, J. Edgar, 78 Shaler Ave., Cliffside
Duffy, Elizabeth C., Woodrow Wilson School, Bayonne
Duplak, Nellie P., 321 Harrison St., Passaic
Eddinger, Lester, Bangs Avenue School, Asbury Park
Edwards, Elizabeth, Maywood School, Maywood
Erath, Mrs. Mabel V., 361 Somerset St., North Plainfield
Fenimore, Mary A., 215 N. Fourth St., Camden
Fillips, Susan M., 97 Center St., Metuchen
Finger, Mary H., Cadwalader School, Boudinot St., Trenton
Fisher, Harriet M., Hamilton School, Highland Park
Floyd, James R., Lincoln School, Newark
Forester, John J., Bradford School, Upper Montclair
Freeland, Grace A., 121 Summit Ave., Summit
Frigiola, Rosa, 308 Henry St., Fairview
George, Jessie F., Third Avenue School, Westwood
Gerlack, Luella, 116 N. Second St., Millville
Gerow, Aline, Public School No. 10, Jersey City
Gremont, Helen C., 370 South Ave., Bridgeton
Gronde, Franklin J., 218 Fourth Ave., Bradley Beach
Haines, Jennie F., 59 Elmwood Ave., Union
Hambright, John B., Maple Avenue School, Newark
Hammond, D. Stanton, 965 E. 23rd St., Paterson
Hargrove, William B., Charlton Street School, Newark

Hartman, A. L., 105 Haddon Pl., Upper Montclair
Harvey, Mrs. Loretta, Woodrow Wilson School No. 19, Edgar Rd., Elizabeth
Hasbrouck, Martin, School No. 21, Paterson
Hegel, Lizzie, 66 S. Tenth St., Newark
Hermann, Catherine B., 137 Roosevelt Ave., Carteret
Herron, John S., Lafayette Street School, Newark
Hice, Mae, 431 E. Second St., Plainfield
Higgins, E. May, 589 Mountain Ave., Bound Brook
Hoek, Floyd G., 43 Zabriskie St., Haledon
Howard, L. Frances, Saybrook School, Hillside
Howard, Margarette E., 121 Summit Ave., Summit
Hulse, Henry S., Jr., Burnet Street School, Newark
Hummer, H. Myrtle, 28 Wall St., Trenton
Hutton, Lillie M., 556 Royden St., Camden
Ireland, Ruth Anne, Tuscan School, Maplewood
Jacob, Walter, Jr., Emerson School, Plainfield
Jeffrey, Mrs. Mathilde C., 162 Lafayette Ave., Hawthorne
Jenkins, Albion U., 357 E. 37th St., Paterson
Johnson, Alberta M., 8 N. Providence Ave., Atlantic City
Johnson, Coates L., 25 Thrumont Rd., Caldwell
Johnson, E. A., Klockner, Trenton
Johnson, Sara G., Rand School, Montclair
Johnston, Ruth S., George Washington School, Ridgewood
Jupp, Estelle S., Washington School, Rutherford
Keller, Ethel M., 512 Roosevelt Ave., Carteret
Kelly, Ruth Bryan, West Creek School, West Creek
Kincaid, Stella M., 88 Essex Ave., Glen Ridge
Klein, Mrs. Anna L., Public School No. 1, Guttenberg
Koemer, Grace E., 101 N. Grove St., East Orange
Kurtz, Elizabeth H., 120 Mulberry St., Millville
Kurtz, Louise, 126 Kingsland Rd., Nutley
LaVance, Laura F., School No. 8, Delawanna
Lee, Ethel M., 673 Fairview St., Camden
Lehlbach, Emma, 394 S. Belmont Ave., Newark
Lembeck, Lillian R., Grant School, Dumont
Lesh, William S., 20 Stephen St., South River
Lilley, Edna J., 1215 Eldredge Ave., W., Collingswood
Lister, Elma, School No. 6, Hackensack
Logan, Mary G., Nathan Hale School, New Brunswick
Love, Jesse, Box 113, Little Falls
Lummis, Martha B., 407 Cooper St., Camden
McDonough, Marguerite F., Roosevelt School, South Plainfield
McMahon, Helen, 162 Fairview Ave., Jersey City
Mathews, Elizabeth A., Davis School, 34th and Cramer Sts., Camden
Meade, Mary P., 108 Smith St., Perth Amboy
Merchant, Mary E., Alexander Hamilton School, Morristown
Michael, Raymond, Gregory School, Trenton
Miller, Elizabeth H., Olcott Primary School, Bernardsville
Miller, Mrs. Eva P., Spring Garden School, Nutley
Milligan, John P., 7 Darrow St., South River
Miner, Benjamin C., Central Avenue School, Newark
Mombert, Eleanor, School No. 14, Paterson
Morrison, Howard D., 720 President Ave., Trenton
Mulford, Mrs. Clara T., Vine Street School, Bridgeton
Munson, Ruth W., First Street School, South Orange
Newlen, Lester N., 360 Warwick Ave., West Englewood
Nickum, C. Edith, 311 Montgomery St., Highland Park
Oakes, Grace S., 337 Bellevue Ave., Hammonton
Otis, Elizabeth, 178 Thomas, Bloomfield
Patz, Gustav, 2033 Balmoral Ave., Union
Petty, Letitia, Washington School, Lyndhurst
Pierpont, Elenora V. C., 51 Market St., Salem
Pollard, Louise E., 1399 North Ave., Elizabeth
Pond, Rita C., 72 Willow Ave., Plainfield
Pyle, Olga M., 4426 Cove Rd., Merchantville
Quig, Emily Hart, Washington School, Summit
Reber, Charles E., Abington Avenue School, Newark
Rich, Frank M., 94 Preakness Ave., Paterson
Roe, Warren A., Alexander Street School, Newark
Rogers, Lydia A., James Lawrence School, Burlington
Rose, Guy B., Glenfield School, Montclair
Rudiboc, Mari B., 32 Williams, Metuchen
Sailey, Alice B., 1894 Brunswick Ave., Trenton
Samuels, Ethel Mae, 115 N. Seventh Ave., New Brunswick
Savage, Sue E. Hillside Avenue School, Hillside
Sayre, Martha, 6703 Church Rd., Merchantville
Schmidt, Karl G., Bragaw Avenue School, Newark
Schmitz, E. Winifred, Memorial School, Passaic
Scott, Dorothea A., Montvale, Bergen County
Serven, Edward J., McKinley School, Newark
Serven, Isaac A., School No. 37, Jersey City
Sexton, Wray E., 23 Hoffman St., Maplewood
Shield, Frederic K., 303 Hamilton Pl., Hackensack
Shoe, John M., Middlesex County Vocational School No. 2, Perth Amboy
Sickler, Edna F., 61 Pitman Ave., Pitman
Simons, Mrs. Myrtle H., 67 Salem Ave., Burlington
Smith, William R., 270 Highland Ave., Newark
Southard, Mrs. Maud B., 425 Trinity Pl., Elizabeth
Sperling, William R., School No. 6, Grantwood
Stalter, Ethel, School No. 2, Montvale
Stites, M. Gertrude, 99 Magnolia Ave., Tenafly
Stone, Mary E., 15 Clarke St., Jersey City
Strohoefer, F. K., 813 Ave. C., Bayonne
Stuart, Bryon D., Grant and Franklin Schools, Westfield
Stull, Anna G., Lafayette School, Highland Park, New Brunswick

Summers, Mrs. Katharine W., William Livingston School, Elizabeth
Taistra, Lucyan, Public School No. 8, Seventh and Adams St., Hoboken
Tantum, Emma U., 70 Grandview Ave., Plainfield
Thorburn, Roylouise, School No. 3, Clifton
Titus, Mary F., Helmetta
Traua, E. G., Public School, Gould Ave., North Caldwell
Travers, Charles E., 38 Eglantine Ave., Pennington
Troxel, Emma, 909 McCullum Ave., Cape May
Turner, Sara C., Miss Beard's School, 560 Berkeley Ave., Orange
Van Auken, William D., 102 Bamford Ave., Hawthorne
Van Syckle, Blanch, Public School No. 9, Perth Amboy
Ventres, Shailer W., Hamburg Turnpike, R. F. D. 1, Paterson
Voorhees, Ada Y., 32 Ross St., Somerville
Wade, Mrs. Edith Van G., Elmora School, Magie Ave., Elizabeth
Waller, J. Flint, High School, Lyndhurst
Wamsley, Mrs. Jessie M., Walls School, Pitman
Warwick, Raymond, Bradley Park School, Neptune
Weekley, K. P., 945 Virgil Ave., Ridgefield
Weldon, O. K., Tenakill School, Closter
Whitford, Everett T., School No. 6, Paterson
Whitlock, Sarah O., Lincoln School, New Brunswick
Wilde, Anna A., Union Street School, Ridgewood
Winkworth, Jessie L., 220 Ninth Ave., Haddon Heights
Witteman, Anna M., 39 N. Reid St., Elizabeth
Worrall, Lillie, 621 Kings Highway, Swedesboro
Wright, George W., Elementary School, Far Hills
Wright, Norman A., South Avenue School, Bridgeton
Wright, Stella J., 90 Welton St., New Brunswick
York, Mary G., Jefferson School, Maplewood

NEW MEXICO

Barton, M., Public School, Elida
Kiker, Stella, 240 S. Fifth St., Raton
McCollum, J. R., 1124 E. Silver Ave., Albuquerque
Meyers, George L., Nava Indian School, Newcomb
Schupp, Ona E., 223 N. High St., Albuquerque

NEW YORK

Adams, Norma A., 406 Turin St., Rome
Alexander, Carter, Teachers College, Columbia University, New York
Alter, Harvey E., Thomas Street School, Rome
Anderson, Ellen R., 4 Cedar St., Potsdam
Arnold, Mary L., St. John School, Ithaca
Arnold, Raymond W., Roosevelt School, Kenmore
Arnson, Harriet, Fifth Street School, Niagara Falls
Badanes, Saul, Public School No. 173, Pennsylvania Ave., Brooklyn
Bailey, Iva D., Washington Irving School, Port Chester
Baker, Harold V., Daniel Webster School, New Rochelle
Banker, Gilbert M., 112 Rockland Ave., Hillburn
Banta, Katherine A., 25 Marathon Pl., Port Chester
Barber, E. Olive, 110 N. Main St., Gloversville
Barnett, I. Irving, Public School No. 25, Manhattan, 330 E. Fifth St., New York
Barth, Mark, 251 Stagg St., Brooklyn
Beach, Channing E., 278 Norwalk Ave., Buffalo
Beaumont, Florence, 3316 85th St., Jackson Heights, New York
Becker, Helen L., Public School No. 26, The Bronx, New York
Bennett, Agnes Marie, North Side School, Frankfort
Benton, George W., 88 Lexington Ave., New York
Betts, O. A., Central New York School for Deaf, Rome
Bickle, Sylvia M., 100 Somerton Ave., Kenmore
Bildersee, Dorothy, Public School No. 80, Manhattan, 415 E. 120th St., New York
Bloomfield, M. Elizabeth, 40 Whitfield Ter., New Rochelle
Boecker, Alexander, Public School No. 100, Coney Island, Brooklyn
Boies, Mrs. Lela S., 11 Warren St., White Plains
Borrell, Victorine E., School No. 26, 101 Milton St., Buffalo
Bostick, Eva Gibbs, 1 Greenridge Ave., White Plains
Bostwick, Helen M., 195 Madison St., Brooklyn
Bowie, Katharine C., Public School No. 183, 76 Riverdale Ave., Brooklyn
Boyer, Russell O., Lafayette Ave., Peekskill
Braine, Elizabeth M., 78 Cambridge Pl., Brooklyn
Braker, Henriette, Public School No. 140, 343 60th St., Brooklyn
Brogan, Helen A., No. 1 School, Yonkers
Brown, Helen I., 614 Tacoma Ave., Buffalo
Brown, Zadie, 72 Lenox Ave., Lynbrook
Brownell, Edna M., 19 Lake St., Stillwater
Bruck, John P., 218 Potters Corners Rd., Buffalo
Bugbee, Mrs. Nellie A., R. D. 2, Oneonta
Bullock, Carolina M., Cleveland Avenue School, Niagara Falls
Burns, Anna E., Public School No. 122, Van Alst Ave., and Ditmars Ave., Long Island City
Burns, Arthur D., School No. 4, Madison Ave., Albany
Burns, Mrs. Lillian O., Columbus School, Rome
Butler, O. T., 314 Irvine Pl., Elmira
Butts, Franklin A., Edward Elsworth School, Poughkeepsie
Campbell, Ethel M., 62 Second St., Ilion
Carberry, Vincent A., 97 W. Delawan, Buffalo
Carl, G. Harold, School No. 82, Easton and Hazelwood, Buffalo
Carlson, Clara H., 90-42 206th St., Queens Village, Long Island
Carroll, William L., Public School No. 165, 462-A Eighth St., Brooklyn
Cassavant, Howe K., School No. 23, Whitehall Rd., Albany
Chatfield, Hazen, Public School No. 102, 1827 Archer St., New York
Clark, Giles D., School No. 20, N. Pearl and N. Second Sts., Albany
Clark, Will Mosher, School No. 32, 342 Clinton St., Buffalo
Clarke, Bertha E., 24 Columbia Ave., Binghamton

Clarke, Martha H., 60 W. Broad St., Mt. Vernon
Clemency, Anna E., Public School No. 169, Seventh Ave. and 44th St., Brooklyn
Clifford, Mrs. Barbara M., Nathan Hale School, Mt. Vernon
Cobb, Elmer J., School No. 60, 238 Ontario St., Buffalo
Cochrane, Lyda S., 13 S. Main St., Batavia
Coffin, Rebecca J., 509 W. 121st St., New York
Cohen, Irving L., Public School, Queens Village, New York
Coleman, Georgia Avis, Colonial School, Pelham
Collins, Laura M., 41 Shoshone, Buffalo
Comstock, Emma L., 26 Bank St., Batavia
Conley, Lillian M., Public School No. 131, Queens, Jamaica
Conley, Mary, Parley Coburn School, Mt. Zoar St., Elmira
Conroy, Marie R., 75 Mountainside Rd., Stapleton, Staten Island
Cook, Mrs. Elsie M., 664 82nd St., Brooklyn
Cordes, Mrs. Edith B., School No. 5, Mt. Vernon
Corey, Clara A., School No. 35, 156 Field St., Rochester
Cort, Ambrose, 241 McDougal St., Brooklyn
Costello, Helen A., School No. 3, Troy
Craig, Christine, 14 Elm St., Whitesboro
Crittenden, Harold C., Public School, Armonk
Crooker, Frederick F., Public School No. 128, Brooklyn
Crosby, Mary A., 290 Hawthorne Ave., Yonkers
Dalton, Kathryn, School No. 13, Troy
Dangler, Bertha, Public School No. 118, 5902 Fourth Ave., Brooklyn
Dano, Anna M., 200 William St., Watertown
Darmstadter, Charlotte, Public School No. 22, Buffalo
Davidson, Flora T., 1565 New York Ave., Brooklyn
Davis, Grace L., Lincoln School, E. Lincoln and Archer Aves., Mt. Vernon
DeLaFleur, F. J., Union Free School, Clear Stream Ave., Valley Stream
Delaney, Mary J., 266 Lincoln Rd., Brooklyn
Densmore, David W., Kodak Park School No. 41, Rochester
Deveson, Addie E., Public School No. 8, Great Kills, Staten Island
Devine, Mary J., 19 Clinton St., Norwich
DeVinney, Mabel A., Brighton School, 2200 S. Salina St., Syracuse
Dilly, S. G., 600 W. Gray St., Elmira
Dix, Lester H., 425 W. 123rd St., New York
Donnelly, Ella Marie, Hutchinson School, North Pelham
Donovan, Esther, Cherry Valley School, Garden City
Dromey, Hettie M., Jackson School, 311 Jackson St., Hempstead
Duffy, Fred H., Washington Elementary School, Kenmore
Dukeshire, Stanley C., Rockledge Manor, Yonkers
Dunn, Rachel, 41 S. Pine Ave., Albany
Dwyer, Madeleine, Broad Street School, Glens Falls
Dyer, Nellie C., 509 E. Seventh St., Jamestown
Eaton, Anne T., Lincoln School, Teachers College, 425 W. 123rd St., New York
Ebeling, Elsa, Public School No. 208, Ave. D and E. 49th St., Brooklyn
Ebert, Jessie D., 108 Union St., Schenectady
Eckhardt, Florence, 45 Lake St., Hamburg
Ehrenfeld, Abraham, 251 W. 92nd St., New York
Eldred, Gertrude M., East End School, Oneonta
Elmendorf, George M., Supt of Schools, Plattsburgh
Emmons, Anna, Public School No. 19, Albany
Erdwurm, Lucy, 203 Rivington St., New York
Ernst, Christine, 266 Quail St., Albany
Evers, Catherine V., 626 Sterling Pl., Brooklyn
Fairbairn, Anna L., 40 Fulton Ave., Hempstead
Farrell, James E., School No. 31, 212 Stanton St., Buffalo
Fay, Mamie, Public School No. 122, Long Island City
Finkelstein, Mary E., Public School No. 42, 71 Hester St., New York
Fisher, Frederick W., 481 Woodward Ave., Buffalo
Fitzell, Ruth T., Public School No. 5, Queens, Long Island City
Flanders, Jesse K., State Normal School, Oswego
Fletcher, Mrs. Eudora, Public School No. 180, 16th Ave. and 57th St., Brooklyn
Flynn, Margaret E., Hyde Park School, Niagara Falls
Forssell, Alva E., 119 College Ave., Westerleigh, Staten Island
Frail, Jennie A., Theodore Roosevelt School, Johnson City
Fuchs, Mary P., 8512 85th St., Brooklyn
Gallup, Jackson, Francis Parker School No. 23, Rochester
Genske, Emma, No. 45 School, 752 Central Ave., Dunkirk
Goldin, Myron R., Public School No. 187, 65th St. and 12th Ave, Brooklyn
Gorham, Mary E., 308 Brandywine Ave., Schenectady
Gould, Clifford M., 25 Shepard Ave., Kenmore
Graham, Minnie S., DeWitt Clinton School, Mt. Vernon
Gray, Temperance, Public School No. 82, Fourth Ave. and 36th St., Brooklyn
Gross, Ella, Public School No. 248, Ave. U and W. 13th St., New York
Hakes, W. Gaylord, Grade School, Hyde Park
Halligan, Thomas C., Public School No. 164, Manhattan, 401 W. 164th St., New York
Handley, Mrs. Myrtle C., 21 Trumbull Pkwy., Batavia
Harris, Daisy M., 1826 Valley Dr., Syracuse
Harris, Mabel E., 1303 Howard Ave., Utica
Hartill, Rufus M., Public School No. 87, Queens, New York
Hathaway, Edna E., 12 Second Ave., Gloversville
Hayden, Mrs. Rena C., Jericho Rd., Floral Park
Healey, Gertrude M., Public School No. 26, Bronx, 101 W. Burnside Ave., New York
Hemstreet, A. Earle, School No. 54, Main St. at Leroy, Buffalo
Hendrie, William E., Greenlawn
Henrickson, Velma W., East School, Long Beach, Long Island
Hickok, Mary K., 39 Montgomery St., Ilion
Higgins, Gordon H., School No. 70, Buffum St., Buffalo

Hill, Mark R., S. B. Howe School, Schenectady
Hinderland, Laura J., 14 Beach Rd., Great Neck, Long Island
Hirschbeck, Loretta M., 365 Putnam Ave., Port Chester
Hirsdansky, Simon, Public School No. 4, 1701 Fulton Ave., New York
Hoar, Daniel F., School No. 18, Troy
Hochbrueckner, E. J., Roosevelt School, Newark
Hoffman, Josephine L., 371 Lake Ave., Rochester
Hogan, A. Elizabeth, 22 Judson St., Albany
Hogg, Elizabeth, 40 Floral Ave., Binghamton
Holmes, William H., Supt. of Schools, Mt. Vernon
Holt, Katherine E., 235 E. 57th St., New York
Hopkins, Amelia M., Sacandaga School, Schenectady
Hopkins, Johanna M., Public School No. 148, Queens, 32nd Ave. and 89th St., Jackson Heights
Horn, Mary A., 304 LeRoy Ave., Cedarhurst
Horstman, Edna, Lincoln School, Scotia
Hosic, James F., Teachers College, Columbia University, New York
Howe, Edwin J., School No. 16, 939 Delaware Ave., Buffalo
Huddle, Otto E., High School, Briarcliff Manor
Huggard, Ethel F., 850 Vernon Ave., Long Island City
Huggin, Ellen, 509 Central Ave., Dunkirk
Hughson, Arthur, Public School No. 151, Queens, Woodside, Long Island
Hughston, Robert L., Hills School, R. F. D. 1, Huntington, Long Island
Hulse, Carolyn D., Liberty Street School, Middletown
Hyde, Margaret E., 33 Central Ave., Staten Island
Jenks, Elsie L., West End School, Lynbrook
Jenney, Orlo K., Roosevelt School, New Rochelle
Johnston, Anna C., Public School No. 59, 182nd and Bathgate Ave., New York
Johnston, Sara W., Maple Avenue School, Niagara Falls
Joyce, Charles W., 143 Deerfield Dr., Rochester
Kelly, Catherine A., East Hill School, Ithaca
Kennedy, Agnes R., Public School No. 148, Jackson Heights, Long Island
Kenyon, Lillian B., Montgomery Street School, Johnstown
Ketcham, M. Kathleen, High School, Ebenezer
Kidney, Glenn H., Park School, Ossining
King, Mary T., 48 W. Second St., Mt. Vernon
Kingsley, Emma E., 660 N. Main St., Elmira
Kinsman, Daniel F., Milton Avenue School, Amsterdam
Kirk, Nellie, 293 Woodward Ave., Buffalo
Kline, Ira M., R. F. D. 1, White Plains
Kline, Pearl, 1154 State St., Watertown
Kornfeld, Louis, Public School No. 30, 165 Conover St., Brooklyn
Krause, Arthur K., Public School No. 132, Manhattan, New York
Lange, William, 47 Beechwood, Farmingdale
Lansing, Hugh H., School No. 1, Troy
Lawlor, Caroline E., 4217 167th St., Flushing
Lawlor, Mary, Salem Hyde School, Syracuse
Lawrence, Mrs. Sara W., Ridge Street School, Glens Falls
Leary, Elizabeth, 32 Arundel Rd., Buffalo
LeBaron, Walter A., 1320 State St., Schenectady
Leidt, Edna J., 929 Peace St., Pelham Manor
Leighton, Josephine W., Longfellow School, Mt. Vernon
Lester, Florence G., School No. 79, Lawn Ave., Buffalo
Lewis, Carl E., 13 Eastman Ter., Poughkeepsie
Lindquist, Margaret A., 2475 Palisade Ave., Spuyten Duyvil, New York
Lisle, Herbert, School No. 12, Troy
Lockhart, Raymond J., Public School, Massapequa
Lodato, August, 162 W. Chester St., Long Beach
Lodge, Emma L., 126 Donaldson Rd., Buffalo
Logan, Harriet B., George Washington School, Port Chester
Lortcher, Mrs. Dorothea K., 3309 Lake Ave., Rochester
Lotz, Christine L., Lincoln Park School No. 44, Rochester
McCann, Edward R., 33 Rosary Ave., Lackawanna
McConnell, Effie L., 108 Dubois St., Newburgh
McCormick, Alice V., 1349 Lexington Ave., New York
McCormick, Josephine E., Public School No. 180, 16th Ave. and 57th St., Brooklyn
McDermott, Florence, 482 Front St., Hempstead
McKenna, Lauretta C., 135 Shonnard Ter., Yonkers
McKernan, Mary L., 1229 Kemble St., Utica
McManus, Harold, Public School, Rockland Lake
McSwyny, Mary, Public School No. 130, 70 Ocean Pkwy., Brooklyn
Macdonald, Donald B., 97 Cedarhurst Ave., Cedarhurst, Long Island
Mackay, Eleanor C., 230 S. Second Ave., Mt. Vernon
Maguire, Matilda E., Merrick School, Syracuse
Mahoney, Mary A., 738 Buffalo St., Jamestown
Manheim, Mrs. Sophie C., Public School No. 61, Manhattan, New York
Martin, Ralph E., School No. 34, Blvd. and Warner Ave., Jersey City
Meyenborg, Evelyn A., 434 Eighth St., Brooklyn
Mills, Mrs. Elizabeth B., Bay Avenue School, Patchogue
Minuse, John M., Thomas A. Edison School, Port Chester
Montgomery, Alice M., 11 Livingston Park, Rochester
Morey, Anna A., School No. 14, Troy
Morey, Benjamin I., School No. 16, N. Allen St., Albany
Moriarty, Mrs. Annie B., Public School No. 162, St. Nicholas and Willoughby Ave., Brooklyn
Morrison, J. Cayce, State Education Dept., Albany
Mossman, Lois Coffey, Teachers College, Columbia University, New York
Mott, Evelyn S., Lincoln School, Port Chester
Moyer, Ellena C., 9 Jefferson St., Glens Falls
Murphy, Margaret M., 120 Oak St., Hudson Falls
Narr, Grace, 16 Morris St., Yonkers

Nickles, George F., Children's Village, Dobbs Ferry
Nifenecker, Eugene A., Bureau of Reference, Research and Statistics, Board of Education, 500 Park Ave., New York
Norris, Bessie, 410 E. Main St., Batavia
Norton, John K., 464 Riverside Dr., New York
Norton, Louise V., 103 Merrimac St., Buffalo
Obermeier, Minnie, Public School No. 101, Manhattan, 611 W. 156th St., New York
O'Brien, Josephine G., Public School No. 117, Queens, Jamaica
O'Connor, Kathryn M., 735 Broadway, Kingston
O'Keefe, Emma M., School No. 37, 353 Congress Ave., Rochester
Olmstead, Helen M., 150 Oxford Ave., Buffalo
O'Malley, Margaret, Public School No. 66, Tacoma and Parkside, Buffalo
Orr, Mrs. Mabel L., 200 Lexington Ave., Rochester
Palmer, Gertrude A., 545 W. 164th St., New York
Palmer, James B., State College for Teachers, Albany
Paris, Florence E., 32 Linden Ave., Buffalo
Park, Ford R., School No. 28, Triangle St. and Abbott Rd., Buffalo
Park, John W., 228 Ridgefield St., Albany
Patrick, Georgianna S., 424 Main St., Oneonta
Paulsen, Gertrude M., 410-A Sackett St., Brooklyn
Pearson, Georgia King, 6 Lewis Parkway, Yonkers
Penfold, Arthur, 332 Beard Ave., Buffalo
Pertsch, C. Frederick, Public School No. 29, Henry and Kane St., Brooklyn
Phillips, Ellen M., Public School No. 188, Manhattan, 131 Lewis St., New York
Piedalue, Mary R., Edgewood Elementary School, Scarsdale
Piper, Sarah M., 230 First Ave., Frankfort
Plantz, Nina, 108 Cherry St., Hicksville, Long Island
Pois, Cecelia, 2685 Grand Concourse, New York
Potts, Mrs. Dora H., 170 Greenridge Ave., White Plains
Powers, Francis W., Public School No. 103, 54th St. and 14th Ave., Brooklyn
Powers, Katherine B., Horace Mann School No. 13, Rochester
Powlesland, Walter H., 101 Grant Ave., Syracuse
Pugh, Sterling B., 217 Clinton Ave., New Rochelle
Pugsley, Chester A., Elementary School Administration, State Teachers College, Buffalo
Putnam, Lena M., 602 N. James St., Rome
Quirk, Florence J., Lincoln School, Batavia
Rado, Alfred, Public School No. 89, The Bronx, Mace and Paulding Aves., New York
Ramsdell, Florence R., Marion Street School, Lynbrook
Randolph, Esle, Public School No. 13, 161 Hyland Blvd., Staten Island
Raphael, Selma, 569 W. Chester St., Long Beach
Reigart, John F., 31 Euclid Ave., Yonkers
Reilly, Frederick J., 63 Hamilton Ter., New York
Reinhardt, Helene K., Public School, Palisades
Rhoads, Luke C., Box 93, Mt. Vernon
Riester, Lauretta F., 588 Linwood Ave., Buffalo
Riley, Ruth V., Big Cross Street School, Glens Falls
Robbins, David H., High School, Churchville
Robbins, Lovinia M., 161 Union St., Hamburg
Robertson, John W., Bellerose School, Floral Park
Roe, Christina L., Public School No. 214, Pitkin and Drew Aves., Brooklyn
Roe, Jennette G., School No. 18, Albany
Roeder, Mary S., 2 Beekman Pl., New York
Ronnei, Herman L., Union High School, Valhalla
Ryan, Charles L., 197 Voorhees Ave., Buffalo
Sands, Eugenie, Public School No. 169, 43rd St. and Seventh Ave., Brooklyn
Schaller, Amelia, Public School No. 103, 49 E. 119th St., New York
Schatteles, Mrs. Ruth, 215 W. 83rd St., New York
Schneucker, Elizabeth S., 808 State St., Schenectady
Schroff, Joseph, Public School No. 34, The Bronx, New York
Schultz, Frederick, 346 N. Park Ave., Buffalo
Scott, Maude E., 29 Elizabeth St., Port Jervis
Scudder, Augustine L., Lincoln School, Huntington
Selby, June, Roslyn Heights School, Roslyn Heights
Selby, Miriam F., 152 Ross Ave., New Dorp, Staten Island
Shaw, Helen V., 94 South St., Auburn
Sherburne, M. Louis, 264 Beach 139th St., Rockaway Beach
Sherrard, John P., School No. 44, Broadway and Krupp, Buffalo
Sherwood, Leah, Public School No. 72, 651 New Lots Rd., Brooklyn
Sherwood, Mae, 1502½ E. Main St., Endicott
Silverman, Estelle L., Public School No. 25, The Bronx, New York
Simpson, Mortimer L., Public School No. 170, 7109 Sixth Ave., Brooklyn
Slade, Lillian A., 4 Tilley Ave., Oneonta
Smallenburg, Ella, School No. 67, Buffalo
Smallwood, Winifred, Pere LeMoyne School, 15 LeMoyne St., Syracuse
Smith, Dela V., 1142 Arsenal St., Watertown
Smith, Flora O., Union School, Sloatsburg
Smith, Sim Joe, Asst. Supt. of Schools, New Rochelle
Snapp, Jennie F., Loder Avenue School, Endicott
Snavely, F. B., School No. 8, Buffalo
Snyder, Charles A., School No. 24, Delaware Ave., Albany
Snyder, Katherine R., 37 Midwood St., Brooklyn
Spacht, Charles A., Henry Barnard School, New Rochelle
Specht, Louise, 103 Quentin St., Kew Gardens, New York
Spencer, Cecil F., Box 44, Babylon
Spurgeon, Mrs. Grace H., 112-29 175th St., St. Albans
Stanton, Clifford A., 101 Barton Ave., Utica
Stapleton, Josephine F., 1360 Merriam Ave., New York
Stecher, Mrs. Elizabeth M., Public School No. 110, Manhatan, 28 Canon St., New York
Steel, H. J., 130 Nassau, Kenmore

Steiner, Fredericka, 945 West End Ave., New York
Stevens, Plowden, Jr., 1825 Prospect Ave., New York
Stewart, Ruth A., Chatsworth Avenue School, Larchmont
Stone, Lucy A., 57 Pennsylvania Ave., Binghamton
Sullivan, Lois H., 16 Crampton Ave., Great Neck
Sullivan, Mrs. M. K., 319 St. John's Pl., Brooklyn
Sumner, Bertha E., 110 W. Main St., Batavia
Sumner, S. Clayton, 258 Kennedy St., Syracuse
Swannie, Evelyn Haas, School No. 62, Urban and Moselle, Buffalo
Sweeney, Agnes L., Ashland Avenue School, Niagara Falls
Sweeney, Thomas H., 287 Elm St., Long Island City
Swift, Charles B., 21 Chateau Ter., Snyder
Sylvester, Emma, 143-04 Queens Ave., Flushing
Tallent, Agnes J., Public School No. 132, 320 Manhattan Ave., Brooklyn
Terrell, Mrs. Madelaine H., 84 Cedar Ave., Patchogue
Theobald, Jacob, 234 W. 109th St., New York
Thomas, Rufus G., 138 Hertford St., Syracuse
Thomas, William, Lincoln School, New Rochelle
Tierney, Leonore M., 1356 Pacific St., Brooklyn
Topping, Eva Z., Columbia School, Gloversville
Townsend, Harold L., Boyd School, Solvay
Trace, Charles T., Public School No. 91, Albany Ave. and Maple St., Brooklyn
Traphagen, M. H., 39 Parkway E., Mt. Vernon
Tuger, Margaret E., Waverly Hotel, Herkimer
Vail, May H., 476 Clinton Ave., Brooklyn
VanAnden, Hazel, Sullivan Avenue School, Port Jervis
VanArnum, Eugenia, School No. 15, Troy
VanArsdale, Mary M., 267 Elmwood Ave., Buffalo
Viemeister, Edmund H., Park Ave., P. O. Box 25, Seaford, Long Island
Vincent, H. D., School No. 16, Troy
Vlymen, Henry T., 559 Cypress Ave., Ridgewood, Brooklyn
Waite, Edna A., 451 Clinton Ave., Brooklyn
Wallstein, D. Daniel, Junior High School No. 142, 114th Ave. and 142nd St., Jamaica, Long Island
Wamsley, Paul, School No. 51, 101 Hertel Ave., Buffalo
Warne, Eva M., 26 Wall St., Amsterdam
Warner, Stanley F., 352 Summit Ave., Cedarhurst, Long Island
Webster, George E., School No. 3, Post Rd., Rye
Weed, Leola D., School No. 16, Devonia Ave., Mt. Vernon
Wehle, Hanna, 14 Roosevelt Ave., Larchmont
Weis, Helen, 77 Irving Ter., Kenmore
Welles, James R., Supt. of Schools, Roslyn Heights
Werner, Mrs. Edith F., Robert Fulton School, Mt. Vernon
West, Charlotte M., 237 E. Main St., Mt. Kisco
West, Maude I., 1843 Portland Ave., Rochester
Weyant, Walter B., 330 Lionel Ave., Solvay
Whalen, Frank D., 368 E. 15th St., New York
White, Edith C., 73 DeSales Pl., Brooklyn
Wiedemann, Frank J., 1215 Tonawanda St., Buffalo
Wiggins, Lillian A., Benton Avenue School, Middletown
Wikander, Elin, 350 Lincoln Pl., Brooklyn
Williams, Allan J., 691 Eggert Rd., Buffalo
Wilson, Helen, 60 Hancock St., Brooklyn
Wilson, Martha M., Public School No. 9, Manhattan, 466 West End Ave., New York
Wood, Ethel M., 204 Martine Ave., White Plains
Wood, Eva C., Public School No. 4, 35 Berkeley Pl., Brooklyn
Wool, Kate L., Central School, Ithaca
Wright, Donald A., 821 West St., Carthage
Wright, Mrs. Louise J., 54 Elmwood Ave., Geneva
Wylie, Anna, 2223 Whitney Ave., Niagara Falls
Yeager, Fern M., Nott Street School, Schenectady
Zurbrick, Warren W., School No. 37, 295 Carlton St., Buffalo

NORTH CAROLINA

Beavers, Sallie L., 601 S. Duke St., Durham
Blackwell, Sallie, 311 Vance Apt., Raleigh
Bowling, Harry M., Boulevard Branch, Leaksville
Cameron, Julia Lee, Graded School, Wadesboro
Carson, Q. M., 19 Soco St., Asheville
Hearne, Clara, Box 577, Roanoke Rapids
Helms, H. A., Central Junior High School, Greensboro
Jamison, Florence, 908 W Fourth St., Charlotte
McIntyre, Kate A., Central School, Laurinburg
Merrill, Vanda E., Route 1, Mocksville
Paylor, Ivey, 1006 Johnston St., High Point
Reid, Florence M., Box 299, Lexington
Sherwood, Mrs. M. B. 214 E. Morgan St., Raleigh
Stafford, Susie F, 511 E. Davis St., Burlington
Wells, Mrs. A. H. Frederick Wodward School, Wilson
Winstead, Clee, Route 1, Wilson

NORTH DAKOTA

Brandt, Ivy, 914 Fifth Ave., S., Fargo
Champine, Jennie L., Agassig Grade School, Fargo
Grindstuen, Iver I., Supt. of Schools, Beach
Hanson, Signe, Jefferson School, 16th St. S., Fargo
Hanson, Theodore, 916 Belmont Rd., Grand Forks
Hartney, Eleanor M., 416 Eighth St. S., Fargo
Hicks, Mrs. Nellie A., 314 Ninth St. S., Fargo
Hoag, Gertrude E., 224 Eighth St. N., Fargo
McCaine, Adelaide M., 1302 Sixth St. S., Fargo
McKee, Maude, Washington School, Fargo
Olsen, Gustava, 1126 Fourth St. N., Fargo
Phillips, Adelaide, 1415 Eighth Ave. S., Fargo
Walker, Mrs. Sadie A., 701 Tenth St. S., Fargo

OHIO

Adams, Mrs. Jennie H., 87 Eber Ave., Akron
Adams, Mina L., 537 E. Buchtel Ave., Akron
Adel, Mrs. Elmore E., 25 N. 21st St., Columbus
Allen, Cora F., 872 S. Champion Ave., Columbus
Altamer, W. H., College Hill School, Cincinnati
Andrew, Ellen B., Kilgour School, Herschel Ave., Cincinnati
Antrim, Louise, 12221 Clifton Blvd., Cleveland
Arey, Essie, Windsor School, Cincinnati
Armstrong, J. J., 1581 Cascade Dr., R. D. 2, Youngstown
Augspurger, R. E., 803 Fairview Ave., Hamilton
Baird, Mrs. Lura Fortney, 23rd District School, Vine and University, Cincinnati
Bates, Ernest D., 329 Pioneer St., Akron
Baughin, Maude, Rimer School, Akron
Betts, Mrs. Mary T., School for Crippled Children, 335 Rockdale Ave., Cincinnati
Bevington, Rachel, Garfield School, Detroit St. near Grace Ave., Lakewood
Biszantz, Cina L., 11311 Clifton Blvd., Cleveland
Brabec, Corinne, Central School, Dayton
Brett, Charlotte J., 16001 Fernway Rd., Shaker Heights, Cleveland
Bridgman, Bertha, 271 Second St., Byesville
Brooks, C. J., Kirby Road School, Cincinnati
Brookes, M. Emma, 1108 The Commodore, Euclid Ave. and Ford Dr., Cleveland
Brown, Nell H., 123 Wroe Ave., Dayton
Brown, W. Q., Kennedy-Siverton School, Cincinnati
Bruhn, Carrie C., 10602 Wade Park Ave., Cleveland
Burdge, Alice V., 3408 Bevis Ave., Cincinnati
Burk, Ellice E., 7805 Franklin Ave., Cleveland
Campbell, Bess M., Birmingham School, Toledo
Case, Mary E., 21540 Detroit Rd., Rocky River
Chidlaw, W. M., Sayler Park School, Cincinnati
Cleland, Lillian A., 1728 E. 116th Pl., Cleveland
Cotterill, Flora B., McGuffey School, 1032 Webster St., Dayton
Covey, Cora L., 110 Arch St., Akron
Crane, H. L., 5636 Bramble Ave., Cincinnati
Cronin, John, Madisonville School, Cincinnati
Crowell, J. A., 3261 Enderby Rd., Cleveland
Curren, Edith L., Hayes School, Lakewood
Daly, Margaret, Roosevelt School, Cincinnati
Daugherty, Grace, Harrison School, Lakewood
Davidson, M. Mabel, 1316 Grand Ave., Dayton
Davis, Luther M., Dyer School, Baymiller and Gest Sts., Cincinnati
Deublin, Anna F., 11701 Ohlman Ave., Cleveland
Diggins, S. Grace, 1690 W. 31st Pl., Cleveland
Dombaugh, Alice M., 283 N. State St., Marion
Downing, Georgiana, 12709 Barrington, Cleveland
Dyer, W. C., 1320 Duxberry Ave., Columbus
Easley, Roger W., Bloom Township School, Lithopolis
Eldridge, Amy, Bancroft School, Youngstown
Elliott, Blanche, 1136 Orchard St., Coshocton
Emig, G. C., McKinley School, Eastern and Tennyson Ave., Cincinnati
Evans, Elizabeth, Harding School, Youngstown
Ewan, Sylvia, Highland School, Eastern Ave., Cincinnati
Ferrie, Georgia B., Wade Park School, Cleveland
Flessa, H. L., Taft School, Cincinnati
Fowler, Lena, 1332 Logan Ave. N. W., Canton
Franz, G. F., 109 W. McMillan St., Cincinnati
Gabriel, Florence, 7338 Euclid Ave., Cleveland
Gericke, Meta, 3182 W. 14th St., Cleveland
Giessler, T. A., Anthony Wayne School, Van Wert
Grafton, Elizabeth M., 947 Norton Ave., Barberton
Grant, Bessie, 559 Liberty St., Conneaut
Gray, Lou, 18 Richmond Ave., Dayton
Haddow, Mary A., 103 W. Evergreen Ave., Youngstown
Hague, Edith McGrew, Douglas School, Columbus
Haldane, Jean A., Miles School, 11918 Miles Ave., Cleveland
Hammond, L. Daisy, 111 Oakwood Ave., Oakwood Village, Dayton
Harry, David P., Jr., Western Reserve University, Cleveland
Hart, Helen A., Chase School, Toledo
Hauer, John S., Sixth District School, Cincinnati
Heiser, Bess M., 11 Wroe Ave., Dayton
Henschen, Laura H., 3444 Marvin Ave., Cleveland
Howser, Elma B., 325 Franklin St., Marion
Hoxter, Truman, 78 May Court, Chagrin Falls
Hughes, Clarence J., 2709 Central Ave., Middleton
Hutt, Martha K., 3437 W. 123rd St., Cleveland
Jack, Mary E., Coventry School, Cleveland Heights
Jahn, Anna M., 1222 Shorb Ave., N. W., Canton
Judd, Harriet A., 51 Brighton Rd., Columbus
Kaefer, William, 407 Ludlow Ave., Cincinnati
Karp, Esther, Summit School, Canton
King, Ella B., 1107 Amherst Pl., Dayton
Kingsborough, Hazel, 1427 E. 111th St., Cleveland
Kinker, Minnie L., 1242 Broadway St., Toledo
Kleinsmith, Sylvia N., Madison School, Lakewood
Koons, Stella I., 3304 Jefferson Ave., Cincinnati
Kopf, William H., 66 Eber Ave., Akron
Kuehn, Nita E., 2708 Clark Ave., Cleveland
Layland, Ethel E., 1264 Lincoln Rd., Columbus
Logue, Leona W., Stewart Avenue School, Columbus
Loudon, Agnes V., Oxford School, 914 Oxford Rd., Cleveland Heights
McCarty, Katherine A., 2049 Cornell Rd., Cleveland
McGuire, Gertrude H., 1835 Belmore Rd., East Cleveland

McKelvey, H. W., 156 Lusard St., Painesville
McKinsey, Henrietta, Box 147, Ashtabula
McLaren, Mrs. Mae, 2473 Overlook Rd., Cleveland Heights
May, Laura M., 13201 Cooley Ave., Cleveland
Meador, Mildred, North Fairmount School, Baltimore Ave., Cincinnati
Meermans, Minnie, 1352 E. 85th St., Cleveland
Miller, C. L., Garfield School, Cincinnati
Money, Ella B., Landon School, 1955 W. 96th St., Cleveland
Morgan, Elizabeth, Newbury School, Toledo
Myers, Mary E., 85 S. Adolph Ave., Akron
Norton, B. F., Garden Avenue School, Lorain
Offerman, Kate M., Asst. County Supt. of Schools, Pemberville
Orr, Estelle B., Box 1293 Station B., Cleveland
Park, Olive, Union School, 6700 Union Ave., Cleveland
Peaslee, L. D., Pleasant Ridge School, Cincinnati
Perkins, Hugh V., 3235 Euclid Heights Blvd., Cleveland Heights
Peters, Edith C., 661 E. 123rd St., Cleveland
Pettit, Joseph E., Mayfair School, 14000 Mayfair Ave., East Cleveland
Phelps, Grace C., 88 Linwood Ave., Columbus
Phillips, Mrs. Jane E., 46 Winner Ave., Columbus
Pinhard, Estella M., 3706 Library Ave., Cleveland
Pittenger, Winifred, Irving School, Toledo
Pluckebaum, Dorothy E., 1522 Ruth Ave., Cincinnati
Quirk, W. A., Guilford School, Cincinnati
Ranft, Aleda V., 2846 Torrington Rd., Shaker Heights
Rarey, Mrs. Margaret M., 379 S. Ohio Ave., Columbus
Rebert, Ruth E., 255 E. Midlothian Blvd., Youngstown
Reszke, Felix E., Sands School, Cincinnati
Reynolds, Sadie, 3930 Berkeley Dr., Toledo
Riniker, Amelia, 1615 Shorb Ave., N. W., Canton
Risley, Gertrude, 1528 Westwood Ave., Lakewood
Ritchie, R. R., 2427 Catalpa Dr., Dayton
Rogers, Florence M., McKinley School, 1351 W. Clifton Blvd., Lakewood
Roseborough, Linna, 615 Bellflower Ave., S. W., Canton
Ross, Frances, Shafor Boulevard School, Dayton
Rupel, Maude L., 21 N. Torrence St., Dayton
Ryan, Mary G., 2959 Meadowbrook Blvd., Cleveland
Schlotman, R. C., Heberle School, Cincinnati
Schuh, Belle, 2104 Brookdale Rd., Toledo
Schullian, Augusta M., 1497 Mars Ave., Lakewood
Schwartz, Albert, Cummins School, Cincinnati
Secrist, C. C., R. D. 5, South Hills, Mansfield
Sellers, Mrs. Hazel B., 25 Adelford Ave., Akron
Sidle, Myrtle, 201 Newton Ave., N. W., Canton
Siringer, Meta L., 1451 Lincoln, Lakewood
Slaght, Maude J., 133 W. Second St., Dayton
Spence, A. Marie, 19315 Riverview Ave., Rocky River
Stewart, Ethelyn, 2255 Rexwood Rd., Cleveland Heights
Stewart, L. P., 3475 Morrison Pl., Cincinnati
Stewart, Martha A., 1777 Carlyon Rd., East Cleveland
Stough, Elizabeth, Henry S. Belden School, Canton
Stroud, Winifred J., 5926 Pearl Rd., Cleveland
Terrill, Mayme I., Victory Park School, South Euclid
Thomas, Crilla B., 125 W. College St., Oberlin
Thomas, Lily M., 85 S. Cassady Rd., Bexley, Columbus
Thornton, Charles A., Moreland School, Shaker Heights
Tidrick, Neva J., 2821 Seventh St., N. W., Canton
Tracy, Kathleen, Morgan School, Cincinnati
Treat, Mabel, 15106 Rosemary Ave., Cleveland
Turnbull, Lilian, 1609 Third St., N. E., Canton
Vermillion, Kenneth R., Chambers School, East Cleveland
VonEngeln, Dorothy, Lang School, 200 Dover St., Dayton
Walker, Helen, 1330 E. Broad St., Columbus
Wallace, C. Jeannette, 209 Hawker St., Dayton
Watts, M. P., Daniel Worley School, Canton
White, Mrs. Ethel S., 2628 Brookford Dr., Toledo
Williams, M. Iola, Firestone Park School, Akron
Wilson, C. A., Avondale School, Cincinnati
Wilson, Isabel R., 110 Arch St., Akron
Wright, Pearl, Clifton School, Cincinnati
Xavier, Florence E., 11505 Shadeland Ave., Cleveland
Zapf, Sophie L., 1190 Carlyon Rd., East Cleveland

OKLAHOMA

Abbott, Whitt K., Checotah
Adrean, Toner H., 804 Garfield St., Sand Springs
Albert, Fern, 1002 Choctaw, Clinton
Bailey, W. B., McBirney School, Tulsa
Benfer, Mabel C., 417 Osage Ave., Bartlesville
Brookes, Virginia Jane, Eugene Field School, Oklahoma City
Coffman, George W., 315 G St., N. E. Ardmore
Coppers, A. E., 114 N. Tacoma, Tulsa
Couch, Mrs. Mary D., 1130 N. W. Tenth St., Oklahoma City
Cushman, John W., 2725 N. W. 23rd St., Oklahoma City
Dale, Etta D., 505 S. Rock Island Ave., El Reno
Daniels, W. W., 511 Pettit, Hominy
Denney, Earl C., Franklin School, Tulsa
Dolan, L. B., 2120 W. 22nd St., Oklahoma City
Dyer, Charles E., 30 S. E. 34th, Oklahoma City
Fraizer, Mary, 207 E. Park St., Enid
Fritzson, Edith L., Willard School, 1401 W. Third St., Oklahoma City
Frye, Dora Cox, 529 N. W. 22nd St., Oklahoma City
Giles, O. A., 1348 S. Florence Ave., Tulsa
Gilmer, Juliette, 1106 N. W. 14th, Oklahoma City
Griggs, O. C., 43 N. Wheeling St., Tulsa

Hackendorf, William, 1020 S. Florence Ave., Tulsa
Hacker, A. J., Medio School, Tulsa
Hambrick, F. L., 225 E. Woodrow, Tulsa
Haynes, J. H., 3307 E. Easton, Tulsa
Hodges, J. H., Osage School, Tulsa
Hooper, George J., Dawson School, Tulsa
Hudson, J. S., 2823 E. Fifth St., Tulsa
Hurt, Joe D., Pleasant Porter School, Tulsa
King, Carrie, 309 S. Sixth, Clinton
Knight, R. W., 712 S. Knoxville, Tulsa
LaMar, R. Esther, Roosevelt School, Okmulgee
Laughlin, Mrs. Blanche, 209 N. E. 23rd St., Oklahoma City
Lavengood, L. W., 313 N. Tacoma Ave, Tulsa
McCollum, R. E., 1427 N. Elwood, Tulsa
McMillan, Ethel, 31 W. 14th St., Oklahoma City
Mason, C. C., Lanier School, Tulsa
Moore, T. E., 1331 N. Elwood, Tulsa
Moorhouse, Mrs. Lulu D., 1120 W. Cherokee, Enid
Pauly, Frank R., Board of Education, Tulsa
Pitts, Lena, 408 Beauclair Hotel, Okmulgee
Power, Leonard, Asst. Supt. of Schools, Tulsa
Richards, A. L., 1311 S. Trenton, Tulsa
Riechel, Adolphine, 422 E. 12th St., Okmulgee
Risher, Gladys, 1427 N. Market St., Shawnee
Robertson, L. G., Turley
Rushing, H. F., R. R. 5, Ponca City
Setzepfandt, A. O. H., 1547 S. Delaware Pl., Tulsa
Smith, Levia Meyers, 1509 E. 14th St., Oklahoma City
Walkup, Lydia, Emerson School, Okmulgee
Watson, Isabel, 704 Jennings, Bartlesville
Watts, Winifred, Webster School, Okmulgee
Widner, Guy L., 217 N. Rosedale, Tulsa
Wood, Linnie, 218 W. Eighth, Bristow
Woods, Mrs. Blanche, 1307 W. 19th St., Oklahoma City
Wright, Mrs. Elizabeth, 414 S. Elm, Ponca City

OREGON

Alexander, Mrs. Alevia, 410 E. 55th St., Portland
Bennett, John W., 2503 N. Fourth St., LaGrande
Blough, H. B., 1725 S. E. 22nd Ave., Portland
Boyd, Charles H., 5825 N. E. Rodney Ave., Portland
Buchanan, Mrs. Beulah M., 2536 S. E. 33rd Pl., Portland
Cram, W. A., 4503 N. E. 28th Ave., Portland
Dorman, Hugh B., 816 S. E. 55th Ave., Portland
Ferguson, C. E., 3833 N. E. 77th Ave, Portland
Finnie, Mrs. Alice, North Bend
Ford, W. I., 2645 N. E. 38th Ave., Portland
Freel, A. O., 1042 Cleveland Ave., Portland
Gary, T. J., 521 S. E. 18th Ave., Portland
Hanna, Mrs. Blanche E., 941 S. E. 55th Ave., Portland
Howard, C. A., State Supt. of Public Instruction, Salem
Kiggins, C. M., 1849 S. E. 43rd Ave., Portland
Leonhardt, J. W., 1202 L Ave., LeGrande
Painter, W. C., 63 E. 45th St., Portland
Petteys, W. A., 4007 64th St., S. E., Portland
Prideaux, A. J. 5914 S. E. Taylor St., Portland
Rinearson, L. E., 531 N. E. 39th Ave., Portland
Roberts, L. D., 2930 N. E Bryce Ave., Portland
Swinney, Ruth, 435 Fowler St., Roseburg
Wilkerson, R. A., 1202 M. Ave., LeGrande
Williamson, Sarah, Cove Ave., LaGrande

PENNSYLVANIA

Allen, Anna D., 909 Northampton St., Easton
Allen, Lillie E., 1750 N. 15th St., Philadelphia
Askin, Bessie B., Madison School, Milwaukee and Orion Sts., Pittsburgh
Bartine, Helen W., Ethan Allen School, Robbins Ave. and Battersby, Philadelphia
Beacham, Mabel, 1110 Potter St., Chester
Best, Elizabeth M., 414 Richland Ave., Dravosburg
Biswanger, Wilhelmina A., 1621 Harrison St., Philadelphia
Bjork, Ellen D., 37 Belleview Ave., Bradford
Blessing, Louise, 4837 Lytle St., Pittsburgh
Bowman, Calvin, 29 S. Linwood Ave., Crafton
Breeze, Mary P., 325 N. Craig, Pittsburgh
Breitwieser, William, 201 Summit Ave., Bellevue Br., Pittsburgh
Brunner, Frances C., R. D. 1, Box 132, Turtle Creek
Byers, B. H., P. O. Box 38, Elizabeth
Chambers, Raymond L., 24 W. Logan St., Philadelphia
Chew, Samuel L., Northwest School, 15th and Race Sts., Philadelphia
Christie, Hazel E., Grant Street School, Oil City
Clarke, M. Louisa, J. Q. Adams School, Philadelphia
Cober, E. W., 1419 Elm St., Wilkinsburg
Collins, Bessie Eleanor, 4910 Larchwood Ave., Philadelphia
Collins, Henrietta, Taylor School, Sixth and Erie Ave., Philadelphia
Coster, Ethel M., 337 E. Meehan St., Philadelphia
Courtney, Grace A., 7412 Perrysville Ave., Ben Avon
Crumrine, M. Ella, 917 Chislett St., Pittsburgh
Dale, Ralph B., 1127 S. 52nd St., Philadelphia
Davenport, Ralph F., 136 Drexel Rd., Ardmore
Dobbins, Thomas J., 531 Hansbury St., Philadelphia
Doyle, Florence A., 5375 Wingohocking Ter., Germantown, Philadelphia
Dunn, Etta A., 4112 Penn Ave., Pittsburgh
Eckard, Elizabeth T., Stephen A. Douglas School, Edgemont and Huntingdon, Philadelphia
Edgar, Robert H., 531 Orchard Ave., Bellevue
Edwards, Nellie E., 1434 Chew St., Allentown
Eisenhart, Elsie E., 18 W. Eighth St., Chester
Eissler, Louise, Birney School, Ninth and Lindley Ave., Philadelphia
Enevoldsen, Anna E., Central School, Sayre
Euwer, Mrs. Ora, Clayton School, Pittsburgh

Evans, Abel J., 5215 Chester Ave., Philadelphia
Frankenfield, Ira M., 637 Center St., Bethlehem
Frew, Margaret A., Thomas Wightman School, Squirrel Hill Station, Pittsburgh
Fugett, Joseph R., 120 E. Miner St., West Chester
Funk, M. Estelle, Curtain School, Musgrave and Hostter Sts., Germantown Philadelphia
Galter, Israel, 3133 W. Columbia Ave., Philadelphia
Garver, Francis M., University of Pennsylvania, 112 Bennett Hall, Philadelphia
Geedy, Calder B., 310 S. Brown St., Lewistown
Geiss, Newton W., Asst. County Supt. of Schools, Oley
Gibbs, Mary S., 350 W. Duval St., Germantown, Philadelphia
Gilland, Thomas M., Director of Training, State Teachers College, California
Ginsburg, Morris B., Drexel School, 16th and Moore Sts., Philadelphia
Goll, Reinhold W., 1822 W. Lindley Ave., Philadelphia
Graham, Lillian W., 731 Sherwood, Pittsburgh
Graham, Martha M., 633 Linden Ave., Johnstown
Grunizer, W. F., 159 Sell St., Johnstown
Gustafson, Mrs. Inez, Franklin School, Munhall
Hanlon, Beatrice, 121 Lenowee Ave., Monessen
Hardy, Marjorie, Germantown Friends School, Philadelphia
Hargreaves, Earl S., 6925 Boyer St., Mt. Airy, Philadelphia
Harrington, Gerald F., 323 Green St., Scranton
Hart, Ida M., 5720 Thomas Ave., Philadelphia
Hart, John C., 538 Carey Ave., Wilkes-Barre
Heidinger, Blanche L., 315 Lemonte St., Philadelphia
Henry, Florence M., 1314 Rockland St., Philadelphia
Hirth, Alice, Fifth Ward School, 317 E. Tenth Ave., Homestead
Hitner, John W., 4677 Adams Ave., Philadelphia
Hollingshead, Mary W., 21 Elkinton Ave., Park Pl., Chester
Homer, Francis E., 4800 Conshohocken Ave., Philadelphia
Hood, Mrs. Vivian P., Public School, Drexel Hill
Horsman, Ralph D., Washington School, Mt. Lebanon, Pittsburgh
Houck, K. Fay, 311 E. 11th Ave., Homestead
Hughes, John H., Winton and Mill Rds., Upper Darby
Hurst, Florence B., 4034 Baring St., Philadelphia
Hurst, S. Grace, 234 Charlotte St., Lancaster
Jacobs, Emilie V., McClure School, Sixth and Hunting Park Ave., Philadelphia
Johnson, A. Bessie, 109 Wayne St., Warren
Jones, Mary F., Highland Park School, Upper Darby
Keiper, Mary A., 414 Walnut St., Hollidaysburg
Kell, Jane F., 622 Linden Ave., York
Kemp, Grace K., 2020 S. 16th St., Philadelphia
Kerns, Morey V., 2526 S. Cleveland St., Philadelphia
Kinback, Stella, 643 Adams Ave., Scranton
Kirk, Mabel E., 622 S. Allen St., State College
Kirk, S. Elizabeth, Garrettford School, Drexel Hill
Knipe, Chester S., Jr., York School, Lansdale
Knoch, E. H., 2825 Espy Ave., South Hills Station, Pittsburgh
Krall, Helen, Boas School, Harrisburg
Lafferty, Annie L., 6336 Jackson St., Pittsburgh
Laing, Iva B., 1214 Macon Ave., Swissvale
Laramy, William J., 2452 Merwood Lane, Upper Darby
Laurence, Pauline B., 109 W. Queen Lane, Germantown, Philadelphia
Law, Bertha V., 5318 Friendship Ave., Pittsburgh
Lehr, Clarence W., 205 E. Meade St., Philadelphia
Leslie, R. G., Arthur McGill School, New Castle
Linn, Eva E., 829 N. 63rd St., Philadelphia
Liveright, Alice K., The Drake, 1512 Spruce St., Philadelphia
Lowry, Sarah N., 14 W. Jenkintown Rd., Weldon
Lynch, Catharine L., Keystone School, Upper Darby
Lytle, Annie, 745 N. Negley Ave., Pittsburgh
McClure, Eliza, 55 Hoodridge Dr., South Hills Station, Pittsburgh
McCracken, Mary A., 11 Brushton Ave., Pittsburgh
McCutcheon, Lyda B., Kirkwood Hotel, Pittsburgh
McDowell, Stella D., 112 Race St., Edgewood
McEntee, Bertha C., Washington School, 40th St., Pittsburgh
McKean, Annie, 907 Poplar St., Erie
McMillen, Clara F., 347 Atlantic Ave., Pittsburgh
MacLaren, Roland T., George Washington School, Williamsport
Mahoney, Anna B., 589 Baldwin St., Meadville
Mann, Adda May, 120 Ruskin Ave., Pittsburgh
Maris, Mrs. Edith C., R. D. 2, Oil City
Martin, Jane B., 215 N. Craig St., Pittsburgh
Miller, Madge E., 320 Laurel St., Edgewood
Mitcheltree, Nannie L., Mahoning School, New Castle
Moore, J. F., 2346 Beaufort Ave., Pittsburgh
Morley, Christine C., Cardington Stonehurst School, Upper Darby
Morley, Sallie G., H. C. Lea School, 47th and Locust Sts., Philadelphia
Morse, Melvin E., 4730 Homeland Blvd., Erie
Myers, Edward T., 5143 Oakland St., Philadelphia
Neill, John A., 420 Electric Ave., Lewistown
Nelson, Mary F., J. M. Conroy School, Pittsburgh
Noe, Elizabeth T., 3234 N. 16th St., Philadelphia
Norris, Hugh Grant, 7810 O'Hara Twp. School Dist., Sharpsburg
Notz, Hulda M., 4331 Dakota St., Pittsburgh
Orr, Marie H., 5806 Howe St., Pittsburgh
Payne, Edna P., 303 South Ave., Wilkinsburg

Pearce, Milton O., Sheridan School, G and Ontario Sts., Philadelphia
Phillips, Earle W., 428 Rural Ave., Williamsport
Porter, Hugh L., Chatham School, 227 Bonvue St., Pittsburgh
Pullar, Frances, Torresdale House, Philadelphia
Queripel, Mrs. A. W., 608 Lincoln St., Milton
Rau, Harry J., 552 Washington Ave., Northampton
Raup, Zura E., 128 Hepburn St., Milton
Reisse, George B., 5366 Wingohocking Ter., Germantown, Philadelphia
Robson, William K., 6614 N. Seventh St., Philadelphia
Ross, Anna, 310 Washington Rd., Pittsburgh
Satterthwaite, Tacie R., Public School, Langhorne
Sauerbier, May M., 409 N. Fifth St., Reading
Scheel, Elizabeth A., 2013 Diamond St., Philadelphia
Schillinger, Alberta, 1308½ Louise St., Munhall
Schrader, N. Blanche, 519 Lincoln St., Milton
Scorer, Sadie Mae, Box 404, Homstead
Seaman, Ann, 925 Court St., Honesdale
Seif, Louisa D., 214 Gross St., Pittsburgh
Sharlip, Lou N., 5058 N. Eighth St., Philadelphia
Sharpe, Mildred J., 323 Rochelle St., Pittsburgh
Sheaffer, C. C., 1512 Coursin St., McKeesport
Simpson, Charles E., 3626 N. 19th St., Philadelphia
Sloane, Mrs. E. J., Savoy Apt., 571 Coal St., Wilkinsburg
Soffel, Catherine A., 16 Greenbush St., Pittsburgh
Spangler, Thomas B. F., Jr., 6108 N. Seventh St., Philadelphia
Sproule, Marion K., Hamilton School, 57th and Spruce, West Philadelphia
Sprowles, M. Reba, Fairhill School, Marshall and Somersett Sts., Philadelphia
Steinberg, David L., 5138 N. Fairhill St., Philadelphia
Stevenson, Martha C., W. F. Harrity School, 56th and Christian Sts., Philadelphia
Stewart, Laura E., 123 E. Agnew Ave., Pittsburgh
Storey, Bernice L., 5728 Baum Blvd., Pittsburgh
Strine, Hazel R., 164 S. Front St., Milton
Tennis, Marguerite, 38 N. Harwood Rd., Upper Darby
Thomas, Alfred, Rockland Street School, Lancaster
Thomas, Oscar D., 6160 Webster St., Philadelphia
Thompson, Irene A., Rose School, Pittsburgh
Thornley, Mary, 5 Somerton Ave., Philadelphia
Truby, Charlotte C., 839 Rebecca Ave., Wilkinsburg
Tweed, Jean M., 5235 Wissahickon Ave., Philadelphia
Veith, Charles F., 7034 Marsden St., Philadelphia
Walker, Anna W., 5732 Spruce St., Philadelphia
Walker, James, Jr., 6039 Washington Ave., Philadelphia
Walper, J. A., 1133 Monocacy St., Bethlehem
Whitlow, Effie H., J. M. Logan School, Lydia St., Pittsburgh
Wickersham, Mrs. Lillian M., 106 W. Oakdale Ave., Glenside
Williamson, Edith E., 22 Arbor St., Pittsburgh
Willis, Minnie C., Emerson School, Tenth and Cascade, Erie
Wolf, M. Elizabeth, 581 Morehead Pl., Pittsburgh
Wright, Anne, 3732 N. 19th St., Philadelphia
Wright, Louise B., King Edward Apts., 4609 Bayard St., Pittsburgh
Young, Frances, Abigail Vare School, Third and Morris Sts., Philadelphia
Young, Mrs. N. A., 80 Brownson Ave., Washington
Ziegler, Florence L., Schuylkill Avenue Building, Reading

RHODE ISLAND

Abbott, Charles H., Kenyon Street School, Providence
Barry, Ursula M., Summit Avenue School, Providence
Bray, Marion B., 248 Webster Ave., Providence
Brigham, Deane N., Moses Brown School, 257 Hope St., Providence
Furlong, Theresa G., Ives Street School, Providence
LaPerche, Raymond C., 93 Brandon Rd., Auburn
McNally, Wayne W., Thomas A. Doyle School, 83 Doyle Ave., Providence
Macintosh, Lucile B., 617 Pontiac Ave., Cranston
Moss, Mildred E., 46 Eaton St., Providence
Patt, Hermann George, John Clarke School, Newport
Spurr, E. Blanche, 33 Washington St., Central Falls

SOUTH CAROLINA

Childs, Mrs. Arney R., Logan School, Columbia
Davis, Eddie L., 1317 N. Main St., Anderson
Fogarty, Simon, 151 Moultrie St., Charleston
Goforth, Preston C., Mt. Pleasant Academy, Mt. Pleasant
Saunders, Nannilee, 606 Pendleton St., Greenville
Tonge, Maner L., Hillcrest St., Spartanburg

SOUTH DAKOTA

Anderson, Laura B., 106 S. Summit Ave., Sioux Falls
Bach, B. Harrietta, Lowell School, Sioux Falls
Carpenter, Harriet, Box 18, Aberdeen
DeKraay, Henrietta, Box 18, Aberdeen
Detjen, Esther, 317 Dorian Apt., Aberdeen
Durland, Edna J., 107 S. Jay St., Aberdeen
Ellis, William G., U. S. Indian School, Flandreau
Griffin, Ella M., 816 W. Ninth St., Sioux Falls
Haas, Grace, 1615 S. Minnesota Ave., Sioux Falls
Hamilton, Isabelle, 121 Galena St., Lead
Johnston, Maude E., 414 11th Ave., S. E., Aberdeen
Jones, Lottie M., 817 W. Fifth Ave., Mitchell
Minard, Adah E., 141 Sixth St., N. E., Watertown
Moore, Harriet C., Oglala Boarding School, Pine Ridge

Newkirk, Rachel, Bancroft School, Sioux Falls
Porter, Lulu M., 1120 S. Klines, Aberdeen
Royhl, Ella M., 320 S. Prairie Ave., Sioux Falls
Sell, Dora, Mark Twain School, Sioux Falls
Stallman, Elsie, Hawthorne School, Sioux Falls
Stapleton, Mrs. B. T., 503 South Dakota Ave., Sioux Falls
Venoss, Mabel, General Beadle School, Sioux Falls

TENNESSEE

Anderson, Esse L., Arlington
Bailey, Carrie, Atkins-Porter School, Paris
Barr, Gertrude, 840 Ft. Wood St., Chattanooga
Bell, Nellie, 616 E. Brow Rd., Lookout Mountain
Brown, Mrs. A. S., Murphy School, Nashville
Brown, G. Russell, 1201 Russell St., North Chattanooga
Burke, Lottie C., 2715 Lombardy, Memphis
Campbell, Edith L., South Side School, Johnson City
Carpenter, Clara E., 564 W. Shadowlawn Dr., Chattanooga
Cartwright, Priscilla, 1294 LaPaloma, Memphis
Dreyfus, Florence, 195 Angelus Pl., Memphis
Fitzgerald, Roby B., Roby Fitzgerald School, Greenville
Hinton, Janie, Collierville
Kennedy, Mrs. Lulu R., 804 W. Main Ave., Knoxville
Leavell, Ullin W., George Peabody College for Teachers, Nashville
Lotspeich, Mrs. R. D., 312 Hemphill Ave., Chattanooga
Lynk, W. A., 503 Alston Ave., Memphis
Melson, Inda, 3546 Spottswood Ave., Memphis
Pate, Florence, Lawler School, Memphis
Powell, Mrs. Kathryn, Bethel Grove School, 17 S. Rembert, Memphis
Powell, L. R., 1625 N. Parkway, Memphis
Shryer, Stella H., Box 71, Lebanon
Turner, Elizabeth, 211 Fairfax St., Knoxville
Underwood, R. H., 720 Parkway Ave., Fountain City
Waldran, Sallie, Lion's Open Air School, 1663 Peach St., Memphis
Wells, Word, Vollentine School, Memphis
Williams, Mrs. Isa, McCampbell School, Knoxville
Yost, Mrs. Robert, Anderson School, Bristol

TEXAS

Arrington, Mrs. Empress, 3118 Douglas St., El Paso
Austin, Frank D., Franklin School, Tenth and Mobile, Port Arthur
Baskett, Mrs. Fannie 2917 Douglas, Dallas
Baskin, Mildred, 724 Baltimore Ave., San Antonio
Bellamy, W. S., 801 Woodlawn, Dallas
Berry, Esther, 2209 Ninth St., Wichita Falls
Boone, Mamie E., 132 E. 12th St., Dallas
Boyles, Reba S., 1201 Gray St., Houston
Brand, Florence, 412 McGowen St., Houston
Bright, J. B., 211 Forest Ave., Cleburne
Brightwell, Mamie, 3736 Lipscomb St., Ft. Worth
Brown, Mrs. C. J., 543 Heights St., Houston
Brownson, Katherine, Box 174, Valley Rd., El Paso
Buckmaster, Stella, 4924 Bryan St., Dallas
Budd, Harold, 6210 Reiger Ave., Dallas
Burgess, Kate, 1208 Scott Ave., Wichita Falls
Burke, Margaret E., 720 W. Poplar St., San Antonio
Bush, A. S., 1550 W. Magnolia, San Antonio
Buttery, Nellie, Lamar Annex Hotel, Houston
Caradine, Jane, Charlotte M. Allen School. Houston
Carpenter, Nette, 426 Rigsby, San Antonio
Clifton, H. Lee, 112 Ave. F., Burkburnett
Clifton, Mrs. J. A., 2734 Federal St., El Paso
Cochrane, Mrs. M. A., 811 Howard St., San Antonio
Colding, Kate, 522 Fourth St., San Antonio
Daniel, Maud, 2425 McFerrin, Waco
Darrow, Harriet, 1326 S. Fifth, Waco
Davis, Eva Margaret, River Oaks Elementary School, Houston
Davis, J. M., DeQueen School, Port Arthur
Davis, W. L., 2110 Hutchins St., Houston
DeChaumes, Helen C., 2203 San Jacinto St., Houston
Donovan, D. W., 2114 Tangley St., Houston
Douglass, Mrs. Louise W., 1818 Rosewood St., Houston
Eddins, A. W., 400 Kirk Pl., San Antonio
Fisher, G. N., 3400 Purington St., Ft. Worth
Gideon, S. E., 1906 Bennett, Dallas
Glasgow, B. W., 2719½ Fairmount St., Dallas
Gorbutt, Catherine, 625 W. Yandell, El Paso
Grady, Margaret, 109 S. Crawford St., Dallas
Grafton, E. G., 3916 Worth St., Dallas
Greer, Loula, 1351 Washington Blvd., Beaumont
Grizzard, Mabel Youree, 711 W. Main St., Waxahachie
Hamilton, William Anderson, City Park School, Dallas
Harris, J. F., 711 Clermont St., Dallas
Harvey, A. D., Box 201, Kingsville
Heilig, Irma, School No. 28, San Antonio
Herring, L. R., Box 436, Tyler
Hilbun, T. J., French Grade School, Beaumont
Higgins, Annie, 1520 W. Travis St., San Antonio
Higgins, Gertrude, 1015 N. Florence St., El Paso
Hobby, Louise, 2245 Neches St., Beaumont
Hoffman, H. G., 3223 Ave. H., Ft. Worth
Holden, P. H., 1820 Live Oak St., Houston
Hood, John H., 3015 Chenevert St., Houston
Howard, Mrs. Lily, 700 Upson Ave., El Paso
Jewell, Frances, 2632 Jeffries, Dallas
Johnson, Mrs. Emrie, 1900 E. Houston St., San Antonio
Johnston, Minnie L., 1524 Buena Vista St., San Antonio
Jordan, Roland C., Box 596, Texas City
Jordt, Elsie B., 320 Maverick St., San Antonio
Keeney, Mabel, 1903 N. Raynor St., El Paso

Kelly, J. F., 1134 N. Clinton, Dallas
Kirk, J. W., 509 E. Jefferson, Dallas
Lamb, H. L., Grim School, Texarkana
Langford, Nora, 721 Dickson St., Ft. Worth
Lantrip, Dora B. 4525 McKinney Ave., Houston
Lipscomb, Mrs. Virginia C., 703 Lipscomb, Dallas
Lloyd, S. M., 6126 Goliad, Dallas
Lyle, J. W., 5217 Jackson St., Houston
McCorkle, Nelle, 5017 Gaston Ave., Dallas
McFarland, Adaline, 1313 Castle Court Blvd., Houston
McNeill, Elizabeth, 725 Ogden St., San Antonio
McNiel, Joe B., 1664 Ardath St., Wichita Falls
MacMunn, Fannie, 723 Seventh St., Beaumont
Martin, Howard H., 5020 Victor, Dallas
Mathis, Franklin M., 212 Lindsey Lane, Tyler
Meek, Mrs. Florence A., Robert E. Lee School, Port Arthur
Melear, Grace, 1618 N. 15th St., Waco
Mitchell, Q. B., 947 Culebra Ave., San Antonio
Montgomery, Florence, 1530 Sul Ross Ave., Houston
Morris, C. W., 3420 University Blvd., Dallas
Morris, Meman H., 4127 Travis St., Dallas
Morse, Mrs. Alberta H., 967 Montana, El Paso
Moynahan, Ruth T., 307 S. Pinto, San Antonio
Muse, E. W., 124 N. Edgefield, Dallas
Namendorf, Lavina, 1508 Kane St., Houston
Nance, L. T., 1518 N. 21st St., Abilene
Nash, Mrs. J. B., Lamar School No. 6, San Antonio
Neal, Elma A, 510 E. Dewey Pl., San Antonio
Nelson, M. R., 933 Waverly, San Antonio
Newby, W. B., Box 545, Temple
Nissle, C. J., 1810 Courtland St., Houston
Odom, I. N., 1429 S. Eighth St., Waco
Oehler, J. C., Jr., Cumberland School, Dallas
Parker, Lulu, 1420 W. Humbold St., Ft. Worth
Pass, S. E., 1141 Amarillo St., Abilene
Patterson, Mrs. Mamie L., Gateway Hotel, El Paso
Payne, Mrs. Bertha S., 225 W. 21st, Houston
Payne, Mrs. Eunice R., 211 W. Rio Grande St., El Paso
Phillips, Lillian, 904 Maple St., El Paso
Pierce, Thomas E., 1146 Amarillo St., Abilene
Pittman, Mrs. M. V., Raymondville
Pugh, L. L., 1830 Palm St., Houston
Rawlings, Minnie O., 528 Upton St., San Angelo
Reagan, G. H., Lida Hooe School, Dallas
Reed, Willa Grace, Grade School, Seymour
Rice, Klifford, Hilton Hotel, El Paso
Riddle, Marie Sue, 514 N. 15th St., Waco
Rorie, George C., David Crockett School, Dallas
Schaper, Mamie Elsa, 702 Speight Ave., Waco
Smith, Ella J., 1316 Clover Lane, Ft. Worth
Standish, Ella, 3320 Broadway, Houston
Stearns, Ellen K., Route 3, Box 17, Houston
Stephens, A. R., Amelia School, Route 1, Beaumont
Stewart, Bessie L., 1109 Burnett St., Wichita Falls
Stewart, Mrs. Emaline O., 1526 California, Houston
Stone, Grace, 1600 Summit Ave., Waco
Stuart, Mrs. Amy E., 3313 Knight St., Dallas
Swann, Alicia, 2931 Aurora St., El Paso
Swindells, Minnie H., 625 Woodlawn, Dallas
Tatum, Robert T., 711 Poplar St., Beaumont
Thomas, Lilia, R. F. D. 2, Box 61, El Paso
Thorne, Carl, 5929 Hudson, Dallas
Waggaman, Louise, 2218 Caroline Blvd., Houston
Whittlesey, James T., 317 S. Marsalis Ave., Dallas
Wilson, Mrs. Olga, 2852 Pershing Dr., El Paso
Wilson, Mrs. W. F., 215 Hawthorne Ave., Houston
Woods, Mrs. Mabel T., 118 Altic St., Houston
Wright, Mrs. Edith D., Hawthorne School, Houston Ave. and Bingham, Houston
Young, Wayne, 2010 14th St., Port Arthur

UTAH

Allen, Frank S., Hamilton School, 770 S. Eighth, E., Salt Lake City
Anderson, Lois, 1238 Bryan Ave., Salt Lake City
Arnesen, Arthur E., 1145 Kensington Ave., Salt Lake City
Bond, Elizabeth, 713 Belvedere Apts, Salt Lake City
Brewer, Eva M., Hotel Utah, Salt Lake City
Bridgland, L. A., 1348 Princeton Ave., Salt Lake City
Brown, Florence G., Polk School, Ogden
Craven, Ina E., Box 783, Ogden
Ferris, Olive, 813 Belvedere Apts., Salt Lake City
Fitzgerald, Gertrude, Box 783, Ogden
Folsom, H. B., R. F. D., Farmington
Forrester, Katherine S., 411 Belvedere Apts, Salt Lake City
Garff, H. N., 1534 Garfield Ave., Salt Lake City
Harris, J. J., 1550 Yale Ave., Salt Lake City
Keele, Charles H., Emerson School, 1337 McClelland St., Salt Lake City
Kelsey, Ella, 656 S. Fourth, E., Salt Lake City
Kendel, Edith E., Longfellow School, Salt Lake City
Layton, Margaret, Lowell School, Salt Lake City
Light, Edith M., 548 23rd St., Ogden
McCoy, Mrs. Evelyn R., Wasatch School, 1115 E. South Temple, Salt Lake City
Miller, Mrs. Lois, University of Utah, Salt Lake City
Morgan, Margaret E., Liberty School, 1092 S. Third, E., Salt Lake City
Morris, Zeta, 223 W. North Temple, Salt Lake City
Peirce, M. June, Box 566, Ogden
Pendleton, Della, 928 E. 21st S., Salt Lake City
Poulson, Frank G., 1521 S. Ninth, E., Salt Lake City
Poulson, Fred N., Hawthorne School, 1632 S. Seventh, E., Salt Lake City
Reid, E. T., Sanpete South School Dist., Manti
Sorenson, Vio, 716 S. Fifth, E., Salt Lake City
Stearns, Harold J., Roosevelt Junior High School, 843 Lincoln St., Salt Lake City

Steele, Jesse F., High School, Toole
Stewart, I. Daniel, 636 S. Third, E., Salt Lake City
Whelan, Lillian H., 411 Belvedere Apts., Salt Lake City
Young, Sara H., Ensign School, Salt Lake City

VERMONT

Clossey, William H., 248 Elm St., Montpelier
Patterson, Mrs. Geneva T., Box 477, Newport
Sargent, William A., 15 North St., Extension, Rutland

VIRGINIA

Adair, Cornelia S., 2121 Park Ave., Richmond
Bleight, W. Carter, Chimborazo School, Richmond
Brewbaker, J. J., 422 Westover Ave., Norfolk
Brimmer, Rose L., Schoolfield School, Schoolfield
Bryant, Alice G., Hampton Institute, Hampton
Burnley, Carrie C., 920 E. High St., Charlottesville
Butler, S. R., 1806 Farragut Ave., Norfolk
Davis, Gertrude M., John W. Daniel School, Newport News
Dinwiddie, Sarah, Consolidated Rural School, Mitchells
Edgerton, R. O., Thomas Jefferson School, Portsmouth
Fentress, F. L., Princess Anne
Fraine, Mrs. Lucy B., 1112 Wise St., Lynchburg
Gish, Elizabeth, 2450 Rivermont Ave., Lynchburg
Givens, C. B., Helen Dickinson School, Richmond
Goodwin, Mary A., Patrick Henry School, Richmond
Harris, J. D., Bellevue School, 24th and Grace, Richmond
Harrison, Lucille, 403 N. Belmont Ave., Richmond
Harvey, M. Lizzie, 1419 Early St., Lynchburg
Holt, Lucy Mason, Ocean View School, Norfolk
Joynes, Mrs. Edith B., 410 W. 14th St., Norfolk
Keeling, Lucy G., 202 Merrimac Apt., Norfolk
Kellam, Mary R., Virginia Beach School, Virginia Beach
Lawson, Lena, 906 Campbell Ave., S. W., Roanoke
Lewis, Mrs. Virginia S., Dupont School, Hopewell
Marx, Mrs. E. M. Henry Clay School, Norfolk
Massey, Mabel C., 405 Lincoln Ave., Roanoke
Miller, Berta C., 301 Fauquier St., Lynchburg
Moran, Sarepta A., Venable School, Charlottesville
Musick, A. R., Sixth Avenue School, Portsmouth
Nixon, John L., Buchanan School, Richmond
Ober, Merrill J., James Monroe School, 29th and Newport Ave., Norfolk
Pearman, Mrs. Ida B., 229 S. Jefferson St., Petersburg
Pearson, H. M., Remington
Robertson, A. Zuleime, 1503 Grove Ave., Richmond
Scott, Katherine K., Oak Grove School, 2200 Ingram Ave., Richmond
Scott, Lannie V., Stonewall Jackson School, Petersburg
Shelton, Nollie W., Jr., Grammar School, Birds Nest
Sinclair, Katherine L., City Point Court, Hopewell
Smith, R. L., Harrison School, Roanoke
Starritt, Bertha W., 1320 Chapman Ave., Roanoke
Vaughn, Eva., Jefferson School, Pulaski
Wheatley, C. S. Robert E. Lee School, Danville
Wilson, Elsie E., Magruder School, Newport News
Wray, Charlotte D., 1701 Park Ave., Richmond
Wynn, Nettie F., 418 Avondale Dr., Danville

WASHINGTON

Allen, Nell B., Box 35, Hoquiam
Allen, Zella E., Magnolia School, 28th W. and W. McGraw, Seattle
Beardsley, A. R., 616 Ash St., Vancouver
Blair, William A., 2712 33rd Ave., S., Seattle
Bradley, Florence, Lincoln School, W. 25 Third Ave., Spokane
Budde, Charles A., Georgetown School, Seattle
Cash, E. F., Elementary School, Opportunity
Cassidy, H. A., Alki School, Seattle
Dimmitt, Beniah, Brighton School, Seattle
Durham, M. E., Leschi School, Seattle
Ellert, W. H., Warren Avenue School, Seattle
Erickson, Emma S., State Normal School, Bellingham
Evans, E. H., Lincoln School, Everett
Fitzgerald, Marie, 1332 S. Division St., Spokane
Fowler, I. A., 620 N. Alder, Aberdeen
Gibson, C. E. 7518 20th, N. E., Seattle
Glover, O. K., 1811 Shelby St., Seattle
Graham, Charlotte, Emerson School, Seattle
Guthrie, Viletta H., Stevens School, 418 Fifth St., Wenatchee
Hanawalt, P. B., Supt. of Schools, Box 327, Puyallup
Hanson, Orlando M., Lowell School, Seattle
Hart, Emma C., 1205 Spring St., Seattle
Heaton, O. E., Logan School, Spokane
Hebeler, Amanda, Director of Training, Washington State Normal School, Ellensburg
Heller, Anna E., 618 Jefferson St., Spokane
Henderson, Frank D., Central School, Seattle
Henderson, Grace Clara, Loyal Heights School, Seattle
Herren, Dora S., Montlake School, Seattle
Hoof, Bruce F., 1121 Key St., Bellingham
Knutson, K. J., T. T. Minor School, Seattle
Larrabee, Emma D., F. A. McDonald School, Latona Ave. and E. 54th, Seattle
Lockwood, Jessie M., John Muir School, 33rd S. and Horton Sts., Seattle
McClure, Worth, Supt. of Schools, Seattle
McIlravy, Frank D., Gatewood School, Seattle
McKenzie, Clara E., Columbia School, Ferdinand and 37th St., Seattle
Mackintosh, John J., Webster School, Seattle
Melvin, Belle, Box 481, Everett
Minnig, Etta, Van Asselt School, Seattle

Moffett, L. B., Highland Park School, 11th S. W. and W. Trenton, Seattle
Nettleton, Lulie, Piedmont Hotel, Seattle
Palmer, J. Lee, 1415 E. 14th Ave., Spokane
Parker, Isabelle C., 1418 W. Riverside, Spokane
Pfeifer, Herman, R. F. D. 3, Olympia
Pinckney, Paul W., Columbia School, Bellingham
Pratt, Orville C., Supt. of Schools, Spokane
Reeves, Lester L., 3843 Ashworth Ave., Seattle
Shannon, James F., Rainier School, 23 S. King St., Seattle
Smith, Ray T., West Woodland School, Seattle
Stanton, Edgar A., 3302 E. Mercer St., Seattle
Stoecker, Mamie B., McGilvra School, Seattle
Swedine, Elmer, J. J. Smith School, Enumclaw
Tanner, Blanche L., Concord School, Eighth S. and Concord St., Seattle
Tharp, Elizabeth, Coe School, Seattle
Thune, Elmer T., 5216 S. Park Ave., Tacoma
Towner, Earl M., 2029 Perkins Rd., Lake Forest Park, Seattle
Turnbull, F. A., 1812 W. Sixth St., Aberdeen
Vetting, Ida F., 305 Bellevue Ave., N., Seattle
Warren, J. S., Hawthorne School, Spokane
Weisman, Frances, Willard School, Spokane
Weisman, Sara E., S. 726 Jefferson, Spokane
Welden, Carrie R., 2404 W. Second Ave., Spokane

WEST VIRGINIA

Arnott, Henry O., Box 26, Beckley
Bennett, Anna V., 1601 Charles St., Wellsburg
Fette, Bertha M., Washington School, 501 Main St., Wheeling
Grose, Mary V., Route 5, Box 149, Charleston
King, Mrs. Esther J., 93 S. Fayete St., Beckley
Lawson, W. E., 2903 N. Avery St., Parkersburg
Licklider, Bessie B., Mercer School, Charleston
Lohse, Minnie K., 2143 Market St., Wheeling
McGown, Jennie, 52 24th St., Wheeling
Markley, Ernest L., 64 Virginia St., Wheeling
Porter, Sarah, 210 Ash Ave., Moundsville
Zeiler, Melissa, Vivian School, Vivian

WISCONSIN

Armstrong, Nano E., Lee School, Milwaukee
Atwood, Abbie A., Wilson School, Janesville
Ballou, Ethel L., 2338 Ogden Ave., Superior
Becher, William O., 2219 S. Fifth St., Milwaukee
Best, Margaret, Public School, Port Washington
Betten, I. N., North Twentieth Street School, 20th St. near Wright, Milwaukee
Bickler, Peter, U. S. Grant School, Milwaukee
Birr, O. A., North Eighteenth Street School, 845 N. 18th St., Milwaukee
Boers, Henry C., Forest Home Avenue School, 1516 W. Forest Home Ave., Milwaukee
Buboltz, William F., Bartlett School, 3000 N. Murray Ave., Milwaukee
Callan, Thomas F., East Center Street School, Milwaukee
Campbell, Sue, Hogan School, LaCrosse
Clark, John A., 4505 W. Montana St., Milwaukee
Cleary, Margaret E., Jefferson School, West Allis
Colbert, Cecilia A., 2172 Hi-Moung Blvd., Milwaukee
Colburn, Willis Paul, Andrew Jackson School, 420 N. Jackson St., Milwaukee
Corcoran, Dan W., LaFollette School, Milwaukee
Dougherty, Ruth M., 440 Chippewa St., Eau Claire
Edgar, Mary L. Washington School, Madison
Edwards, H. R., Ludington School, 8324 W. Adler, Milwaukee
Fleischer, Herman P., Highland Avenue School, 630 W. Highland Ave., Milwaukee
Fleming, Vera A., 931 Wisconsin Ave., Beloit
Frahm, Alvina, North Pierce Street School, Milwaukee
Fritschel, Max C., Jr., Maryland Avenue School, Milwaukee
Gardner, Ethel M., 816-A S. 21st St., Milwaukee
Ginty, Mrs. Clara W., Franklin School, Madison
Hahn, William H., Thirty-eighth Street School, 38th and Clarke, Milwaukee
Heffernan, Jesse E., 2112 S. Ninth St., Sheboygan
Hein, Fred W., Walter Allen School, 1657 S. Third St., Milwaukee
Hoole, Patricia, Roosevelt School, West Allis
Horton, S. C., 2770 N. Fifth St., Milwaukee
Houston, W. C., Fourth Street School, 1542 N. Fourth St., Milwaukee
Jones, Renette, 410 W. Wilson St., Madison
Kappelman, Mary, Twenty-Seventh Street School, Milwaukee
Kaross, Ella B., North Fratney Street School, Milwaukee
Karst, Walter F., 7414 W. Wright St., Wauwatosa
Kavanaugh, Katherine, Longfellow School, 1021 S. 21st St., Milwaukee
Kellar, Laura E., 1918 E. Menlo Blvd., Milwaukee
Klett, T. C., 2132 N. 70th St., Wauwatosa
Knoelk, William C., 1111 N. Tenth St., Milwaukee
Koelsch, Joseph F., Madison School, 930 W. Madison St., Milwaukee
Koepke, William C., Siefert School, Milwaukee
Kolb, Philip A., Oklahoma School, Milwaukee
Kottnauer, Annette, Vieau School, 823 S. Fourth St., Milwaukee
Krebs, Iva M., 2980 S. 50th St., Milwaukee
Kriesel, C. A., 840 N. 26th St., Milwaukee
LaBudde, Frank, 107 N. 73rd St., Milwaukee
Lantry, Alice F., West Garfield Avenue School, 414 W. Garfield Ave., Milwaukee
Leard, Margaret, Wright Street School, 5522 W. Wright St., Milwaukee
Leiser, Else, 1242 N. 16th St., Milwaukee

Luening, Edwin G., Neeskara School, Milwaukee
Lutze, Charles F., 801 S. 15th St., Sheboygan
McCabe, Amber, 721 Oakland Ave., Waukesha
McConville, Hannah C., Hamilton School, La Crosse
Manion, M. E., 19 Cottage Ave., Fond Du Lac
Marks, Hannah, 3360 N. Sheridan Blvd., Milwaukee
Marvin, Adeline R., 419 Sterling Pl., Madison
Maurer, Charles H., Walnut Street School, 2318 W. Walnut St., Milwaukee
Millman, Anna, Luther Burbank School, 6035 W. Adler St., Milwaukee
Moffet, Mae, Hartford Avenue School, 2227 E. Hartford, Milwaukee
Morse, Alice C., Dover Street School, 619 E. Dover St., Milwaukee
Murphy, Agnes, North Thirty-Fifth Street School, Milwaukee
Neubauer, Paul F., 1210 W. Mineral St., Milwaukee
Nichols, Walter C., Wisconsin Avenue School, Milwaukee
Nichols, William E., Washington School, Oshkosh
Nicolaus, R. C., 2810 W. National Ave., Milwaukee
Oesau, Theodore J., 2544 N. 41st St., Milwaukee
Parrott, Jessie, Route 7, Box 45, Merrill
Parsons, Emily R., 15 N. Webster St., Madison
Payne, Florence I., 1741 N. Seventh St., Milwaukee
Peasley, Florence E., 1628 31st St., Kenosha
Peck, Adelbert W., Clarke Street School, 2816 W. Clarke St., Milwaukee
Peterson, H. W., Keefe Avenue School, Milwaukee
Pierce, A. K., 2227 S. 82nd St., West Allis
Pranke, Helen M., Garden Holmes School, 4456 N. Teutonia, Milwaukee
Pratt, Velmer D., 2303 E. Washington Ave., Madison
Promberger, William, Thirty-first Street School, 31st and Brown, Milwaukee
Ralph, H. Thoburn, Washington School, 2166 N. 68th St., Wauwatosa
Regan, Julia A., 2209 N. 26th St., Milwaukee
Reichert, C. Lorena, 2134 Keyes Ave., Madison
Rood, Mrs. Allice E., 26 Breeze Ter., Madison
Schleck, Leo P., 1201 Sherman Ave., Madison
Schnell, Fred S., 2722 Highland Ter., Sheboygan
Schnell, Henry S., Mitchell School, 1728 S. 23rd St., Milwaukee
Schuman, E. W., Twelfth Street School, Milwaukee
Schwartz, Carrie E., 3230 S. Adams Ave., Milwaukee
Sieker, Lillian C., Emanuel L. Philipp School, 4310 N. 16th St., Milwaukee
Smithyman, W. Lincoln, William McKinley School, 21st and McKinley, Milwaukee
Sperling, Hugo E., 1311 Maryland Ave., Sheboygan
Speerbrecher, Henry, Roosevelt Junior High School, Ninth and Walnut Sts., Milwaukee
Swartz, David L., Thirty-Sixth Street School, Milwaukee
Thies, Lillian C., 2500 N. Stowell Ave., Milwaukee
Thomas, J. R., Public School, Loyal
Ulrich, Louis E., Sherman School, 5110 W. Locust St., Milwaukee
Vieth, Arnold A., 1029 N. Jefferson St., Milwaukee
Welker, Jean, 1201 Ellis Ave., Ashland
Weltzien, Lena M., 2431 S. Tenth St., Milwaukee
Williams, Howard J., Silver Spring School, 5073 N. Green Bay Ave., Milwaukee
Wood, Blanche, Hotel Superior, Superior
Yule, Charles I., 110 Grand Ave., Oshkosh
Zeiler, Edward J., 5070 N. Hollywood Ave., Milwaukee

WYOMING

Chambers, Margaret J., Grant School, Casper
Dunlap, Mrs. Nona Udell, Willard School, Casper
Eddleman, Minnie L., Box 644, Washington School, Casper
England, Mrs. Martha Shelby, Lincoln School, Casper
Klein, Walter E., Shoshone Indian Day School, Ft. Washakie
Kocher, Lillian A., Townsend Hotel, Casper
McLaughlin, Eleanor, McKinley School, Casper
Olson, Mrs. Helen M., Box 942, Midwest
Stinson, Adelle T., Jefferson School, Casper
Winter, Mae I., Park School, Casper
Woodle, Mozelle, Harding School, Casper

ALASKA

Karnes, A. E., Commissioner of Education, Juneau
Maas, Leroy J., Public School, Unga
Ramsey, R. L., Craig

CANADA

Stafford, Harold D., Central School, Kimberly, British Columbia
Stothers, C. E., Librarian, Prince Edward County, Teachers Institute, Picton, Ontario
Wheable, G. A., Board of Education, London, Ontario

HAWAII

Angus, Myra W., Pohukaina School, Pohukaina and Keawe Sts., Honolulu
Auld, Lily K., Naalehu School, Waiohinu
Brown, Elmer A., Kuhio School, Honolulu
Carter, Mrs. Alice Armeda, Waipahu School, Waipahu, Oahu
Carter, Olive H., Paauhau
Cook, Katharine A., Kipapa School, Oahu Co., Wahiawa
Faulkner, Robert Mardis, Kawananakoa School, Honolulu
Fleming, Mary Elspeth, Paia School, Paia, Maui
Griswold, Charles J., Konawaena Schools, Kealakekua
Hendry, Mrs. Robert, 3015 Kalakaua Ave., Honolulu
Hobby, Mrs. Eleanor C., Eleele School, P. B. 255, Eleele, Kauai
Holtberg, Myrtle H., Elementary School, Wailuku, Maui
Hugelen, Reinhart L., Paauilo School, Paauilo
Kekapa, William K., 1219 Center St., Honolulu
Kellogg, Eleanor A., Ewa, Oahu
Luiz, John C., Waialae School, 19th and Harding Aves., Honolulu

McLaren, Dallas C., Box 248, Waimea, Kauai
Maxwell, Lucy H., Lanai School, Kewalo St., Honolulu
Midkiff, Frank E., Kamehameha Schools, Honolulu
Nobriga, Francis J., Cummins School, Maunaloa and Ninth Aves., Honolulu
Overend, Cecil, Lunalio School, Honolulu
Powell, Mrs. Velma S., Puowaina School, 2144 Leahi Ave., Honolulu
Raymond, George S., Kapaa School, Kealia, Kauai
Sanborne, Paul B., Honokaa School, Honokaa
Scobie, Mrs. Bessie, Aliiolani School, Honolulu
Scott, Mrs. Ada M. B., Kilauea School, Kilauea, Kauai
Silva, Anthony C., Koolau School, Kilauea, Kauai
Webling, G. H., Box 347, Honokaa
Wise, Cosmo Clyde, Wahiawa School, Wahiawa, Oahu

INDIA

Chartrand, C. R., A. B. Mission High School, Taunggyi, F. S., Burma

PUERTO RICO

Adsuar, Josefa Cuadrado, 9 Pacific Pl., Santurce
Gil, Pedro, Bureau of Extension and Examination, Dept. of Education, San Juan
Ginorio, Paula V., Morell Campos St., No. 30, Santurce
Rodriguez, Antonio, Jr., University of Porto Rico, Rio Piedras
Rodriguez, Mrs. Marina F., Box 225, Canovanas

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